

Draft Environmental Assessment

RE Cinco Solar Facility Project Habitat Conservation Plan



U.S. Fish and Wildlife Service
Palm Springs Fish and Wildlife Office
Palm Springs, California

October 2014



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Acronyms and Other Abbreviations

AB	Authorized Biologist
APE	area of potential effects
APLIC	Avian Power Line Interaction Committee
Applicant	RE Barren Ridge 1, LLC
BA	Biological Assessment
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BM	Biological Monitor
BMP	best management practice
BR RTP	Barren Ridge Renewable Transmission Project
Cal-IPC	California Invasive Plant Council
Caltrans	California Department of Transportation
CDCA	California Desert Conservation Area
CDFW	California Department of Fish and Wildlife
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CO ₂ e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
dBA	A-weighted decibel scale
DOD	Department of Defense
DWR	California Department of Water Resources
EA	Environmental Assessment
EIR	Environmental Impact Report
EKAPCD	Eastern Kern Air Pollution Control District
ESA	Endangered Species Act (Federal)
FEMA	Federal Emergency Management Agency
GHG	greenhouse gas
GIS	geographic information systems
HCP	Habitat Conservation Plan
HU	Hydrologic Unit
ITP	Incidental Take Permit
KOP	key observation point
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
MBTA	Migratory Bird Treaty Act
MW	megawatt
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
O&M	operations and maintenance
OHV	off-highway vehicle
PEIS	programmatic environmental impact statement
PM ₁₀	particulate matter up to 10 micrometers in diameter

PV	photovoltaic
ROD	Record of Decision
ROW	right-of-way
SCADA	Supervisory Control and Data Acquisition
SHPO	State Historic Preservation Office
SOP	standard operating procedure
SR	State Route
SSC	Species of Special Concern
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VRI	Visual Resource Inventory
VRM	Visual Resource Management
WEAP	Worker Environmental Awareness Program

1. INTRODUCTION

1.1 Project Overview

The U.S. Fish and Wildlife Service (USFWS) proposes to issue an incidental take permit, pursuant to Section 10(a)(1)(B) of the Federal Endangered Species Act (ESA) (16 United States Code [USC] 1531 et seq.), to RE Barren Ridge 1, LLC (Applicant), for the take of individuals of the federally threatened Agassiz's desert tortoise (*Gopherus agassizii*). RE Barren Ridge 1, a subsidiary of Recurrent Energy LLC, proposes to construct and operate the RE Cinco Solar Facility (the project), an approximately 60 megawatt (MW) photovoltaic solar electric power generation facility located on approximately 500 acres of private land.

Section 9(a)(1)(B) of the ESA prohibits the "take" of federally listed species. Section 3(18) of the ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." USFWS further defines "harm" to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. USFWS further defines "harass" as intentional or negligent actions that create the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns, which include breeding, feeding, or sheltering. Section 10(a)(1)(B) of the ESA authorizes the Secretary of the Interior to permit taking, otherwise prohibited by Section 9(a)(1)(B), if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. To issue a permit under the auspices of Section 10(a)(1)(B), the ESA requires that the permit applicant submit a conservation plan to the Secretary of Interior.

The survey results for the project site concluded that the federally threatened desert tortoise occupies lands that the Applicant would use for construction and operation of the solar facility. Development of the project could result in the incidental take of desert tortoise, which requires a Section 10(a)(1)(B) permit. To obtain this permit, the Applicant prepared the necessary Habitat Conservation Plan (HCP) (AECOM 2014g) to minimize and mitigate, to the maximum extent practicable, the impact of this take.

Prior to making a decision on permit issuance for the proposed solar facility, USFWS must comply with the National Environmental Policy Act (NEPA). In determining the potential significance of effects, Council on Environmental Quality (CEQ) regulations require USFWS to consider both the context and intensity of the action as it applies to each aspect of the human environment (40 Code of Federal Regulations [CFR] 1508.27).

Because issuing a Section 10(a)(1)(B) Incidental Take Permit (ITP) to authorize the take of desert tortoise under the conditions of the HCP would allow for potentially significant effects to the human environment, USFWS has prepared this Environmental Assessment (EA). This EA analyzes the direct, indirect, and cumulative effects on the human environment from issuing an ITP for the solar project HCP.

1.2 Associated Activities

A generation intertie line (gen-tie line) connecting the solar facility to the existing Los Angeles Department of Water and Power (LADWP) Barren Ridge Switching Station would also need to be constructed to deliver power to the electrical grid. The routing of the gen-tie line is dependent on the outcome of the Applicant's application with the Bureau of Land Management (BLM) for issuance of a right-of-way (ROW) grant to construct and operate the gen-tie line on Federal lands managed by the BLM. Accordingly, two routing scenarios are being considered for the gen-tie line's construction and operation: a route using a mix of Federal and private lands, and a route using private lands only. The BLM is expected to make its determination concerning the Applicant's request for the use of Federal lands in late 2014. The two gen-tie line routing scenarios are described in more detail below and are each evaluated in this EA:

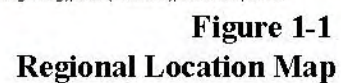
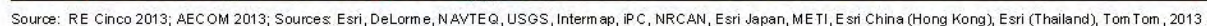
1. **Gen-tie line alignment using a mix of Federal and private lands.** The Applicant's preferred gen-tie line alignment would be constructed primarily on federally owned land administered by the BLM, and would require BLM's issuance of a ROW grant for that use. This gen-tie line alternative would be approximately 2 miles in length. The BLM is analyzing effects associated with issuance of a ROW grant for the gen-tie line per NEPA, and will consult with USFWS pursuant to Section 7(a)(2) of the ESA for the alternative alignments on Federal land. The BLM and USFWS are consulting, pursuant to ESA Section 7 consultation regarding the desert tortoise, on the gen-tie line ROW application because BLM has jurisdiction for approval of the gen-tie line only. Under the scenario where the gen-tie line crosses lands managed by the BLM, USFWS would consider issuing a Section 10(a)(1)(B) ITP for the solar facility (which would lie entirely on private land). Prior to its issuance of an ITP for the solar facility or the BLM's authorization of a ROW grant for the gen-tie line, USFWS would consider the effects of both actions (i.e., its own issuance of the ITP for the solar facility and the BLM's ROW grant for the gen-tie line) on the desert tortoise in a single Section 7(a)(2) biological opinion. Two alternative gen-tie line alignments are under consideration for this scenario; these are analyzed as Alternatives 2 and 3 in this EA.
2. **Gen-tie line alignment using private lands only.** An alternative gen-tie line alignment using only private lands and lands owned by LADWP is also being considered in the event that the BLM does not approve the Applicant's ROW grant application for the use of Federal lands. This alignment would be approximately 3.6 miles in length. Under this scenario for the gen-tie line, the Applicant would supplement the HCP for the private lands solar facility to include a private-lands-only gen-tie line alignment. USFWS's Section 10(a)(1)(B) ITP would also include coverage for the private lands gen-tie line. Since the HCP and ITP under this scenario would include an additional area of private lands beyond that considered for the private lands solar facility, this scenario is analyzed under Alternative 4 in this EA.

1.3 Project Location and Area Overview

The proposed solar facility would be located in unincorporated southeastern Kern County, approximately 6.5 miles northwest of the community of California City, approximately 12 miles northeast of the community of Mojave, and approximately 0.8 mile east of the Los Angeles Aqueduct. Figure 1-1 provides a regional location map, Figure 1-2 shows a local area topographic map, and Figure 1-3 shows an aerial view of the project area, with notable features labeled. The project area is located within the U.S. Geological Survey (USGS) Mojave NE 7.5-minute quadrangle.

The project area is composed of two principal components: (1) the solar facility site, which is located solely on private lands in Section 25, Township 31 South, Range 36 East (Mount Diablo Base Meridian); and (2) a linear gen-tie line alignment that would travel from the solar facility site to the LADWP Barren Ridge Switching Station. Three alternative alignments for the gen-tie line are evaluated in this EA and are described further in Chapter 2. The alternative alignments are shown in Figures 1-2, 1-3, and 1-4. Figure 1-5 shows the land ownership in the project area. As shown in Figure 1-5, the solar facility site would be located entirely on private lands. The southeast corner of the private parcel on which the solar facility would be sited is diagonally traversed by California State Route (SR) 14, which lies within a California Department of Transportation (Caltrans) ROW, approximately 410 feet in width. The northwestern corner of the parcel is diagonally traversed by several electric transmission line ROWs, one of which is occupied by the Bonneville Power Administration's and LADWP's Pacific Direct Current Intertie 500-kilovolt (kV) transmission line and LADWP's existing 230-kV Barren Ridge-Rinaldi Transmission Line. This ROW currently contains the two transmission lines and a service road, and is 250 feet in width. An adjacent 200-foot-wide ROW has been granted by the BLM to LADWP for the planned 230-kV Barren Ridge Renewable Transmission Project (BRRTP), and is scheduled for construction beginning in 2015.

With the exception of the aforementioned SR-14 and LADWP transmission lines, the entire area within and around the solar facility site is undeveloped land. No residences, outbuildings, or similar structures are present. Several unimproved travel routes are located on the solar facility site, and a number of unimproved BLM-designated off-highway-vehicle (OHV) routes pass through the surrounding area.



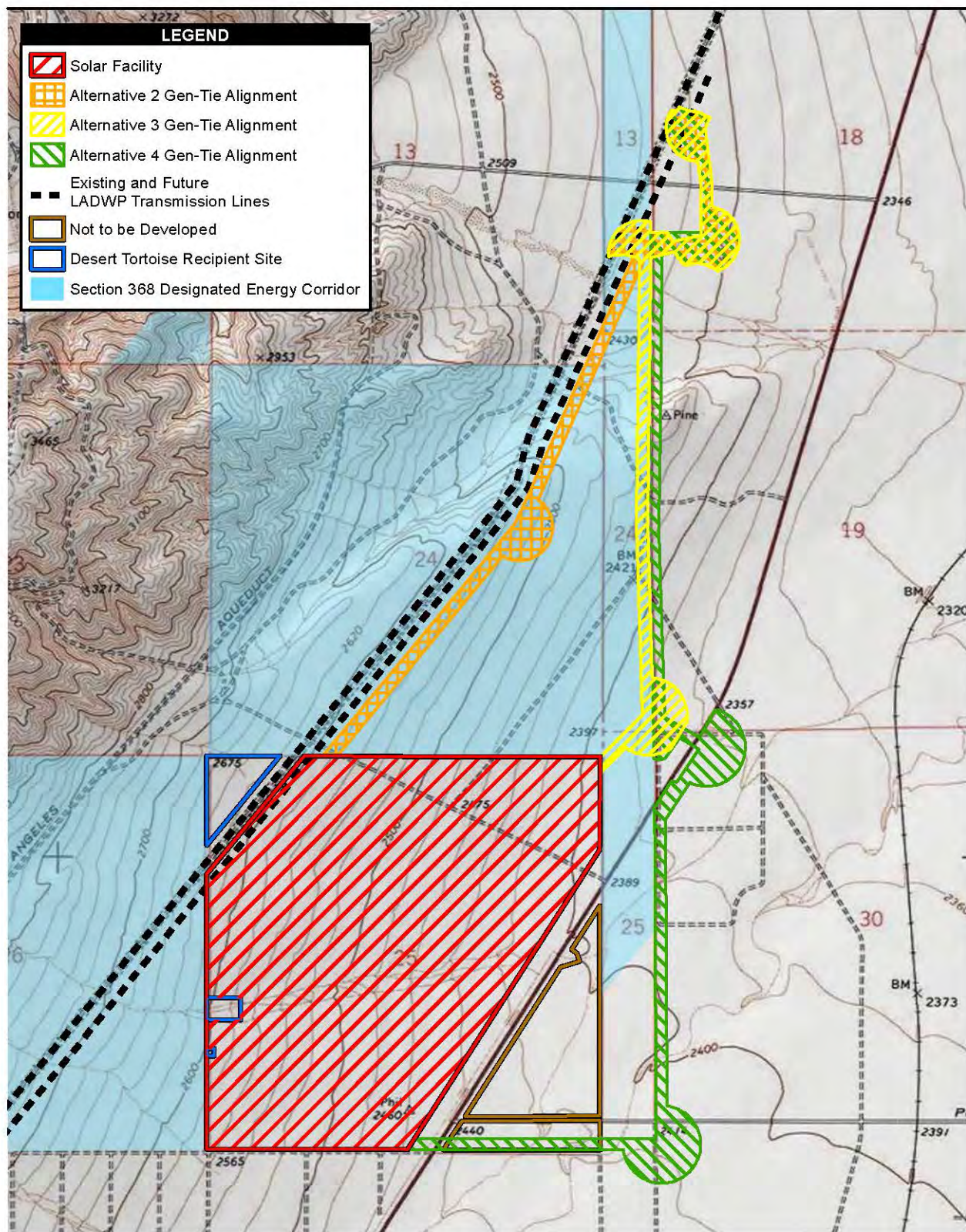
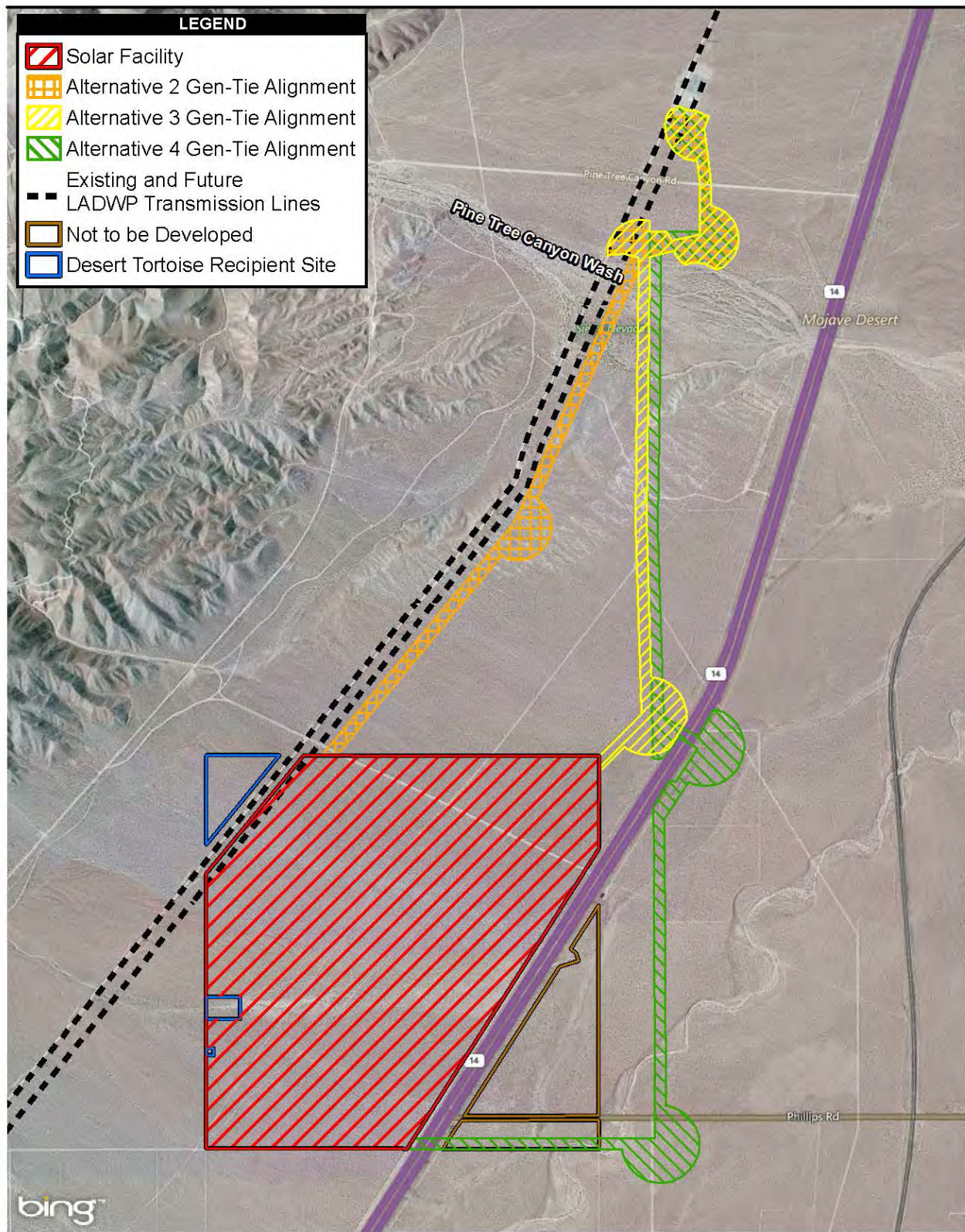


Figure 1-2
Topographic Vicinity Map



Source: RE Cinco 2013; AECOM 2013; Image courtesy of USGS Image courtesy of the Nevada State Mapping Advisory Committee © 2014 Microsoft Corporation © 2014 Nokia © AND

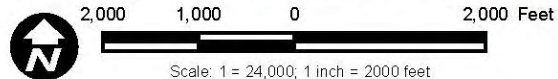
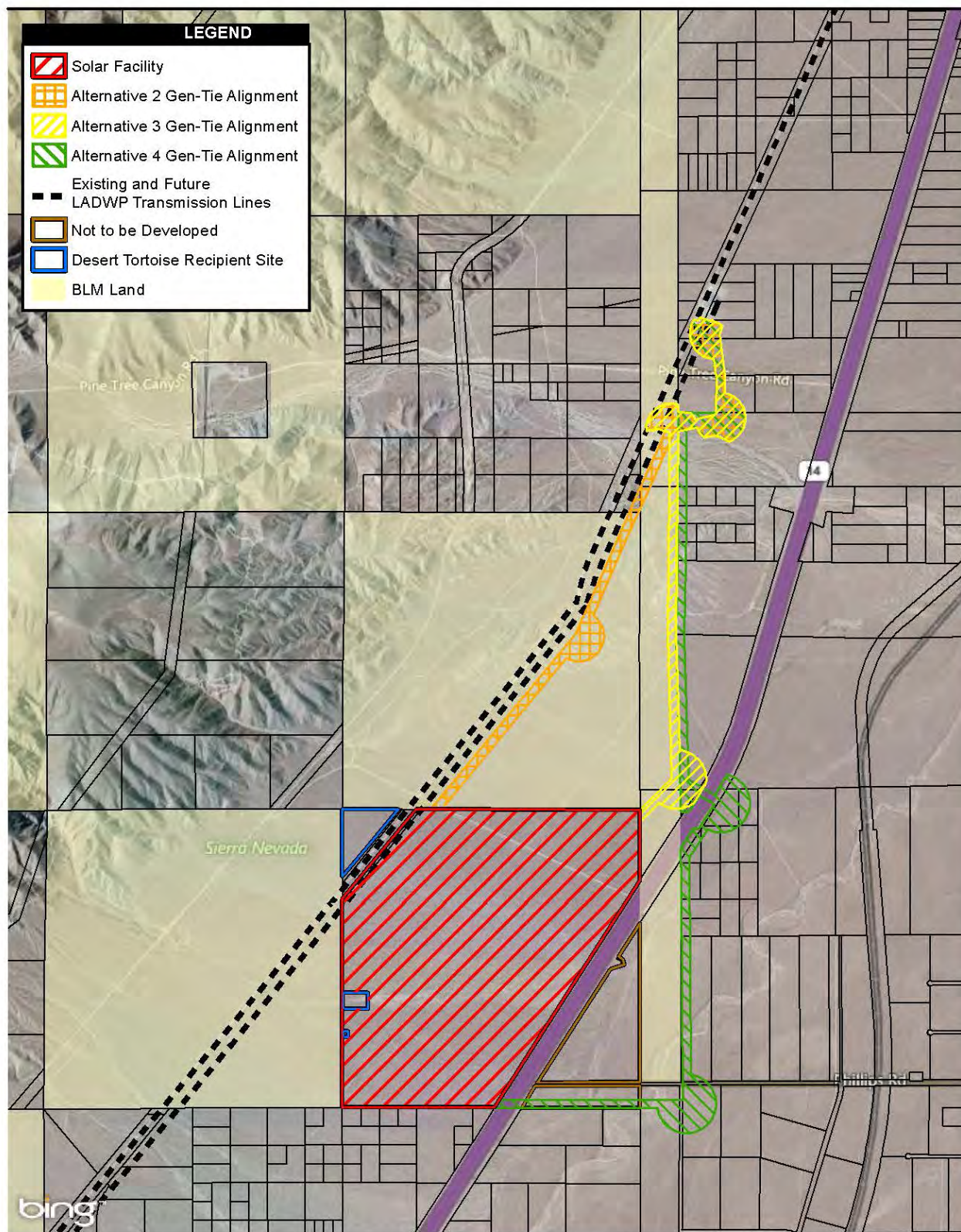
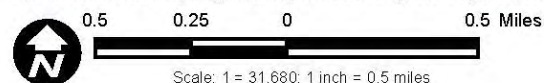


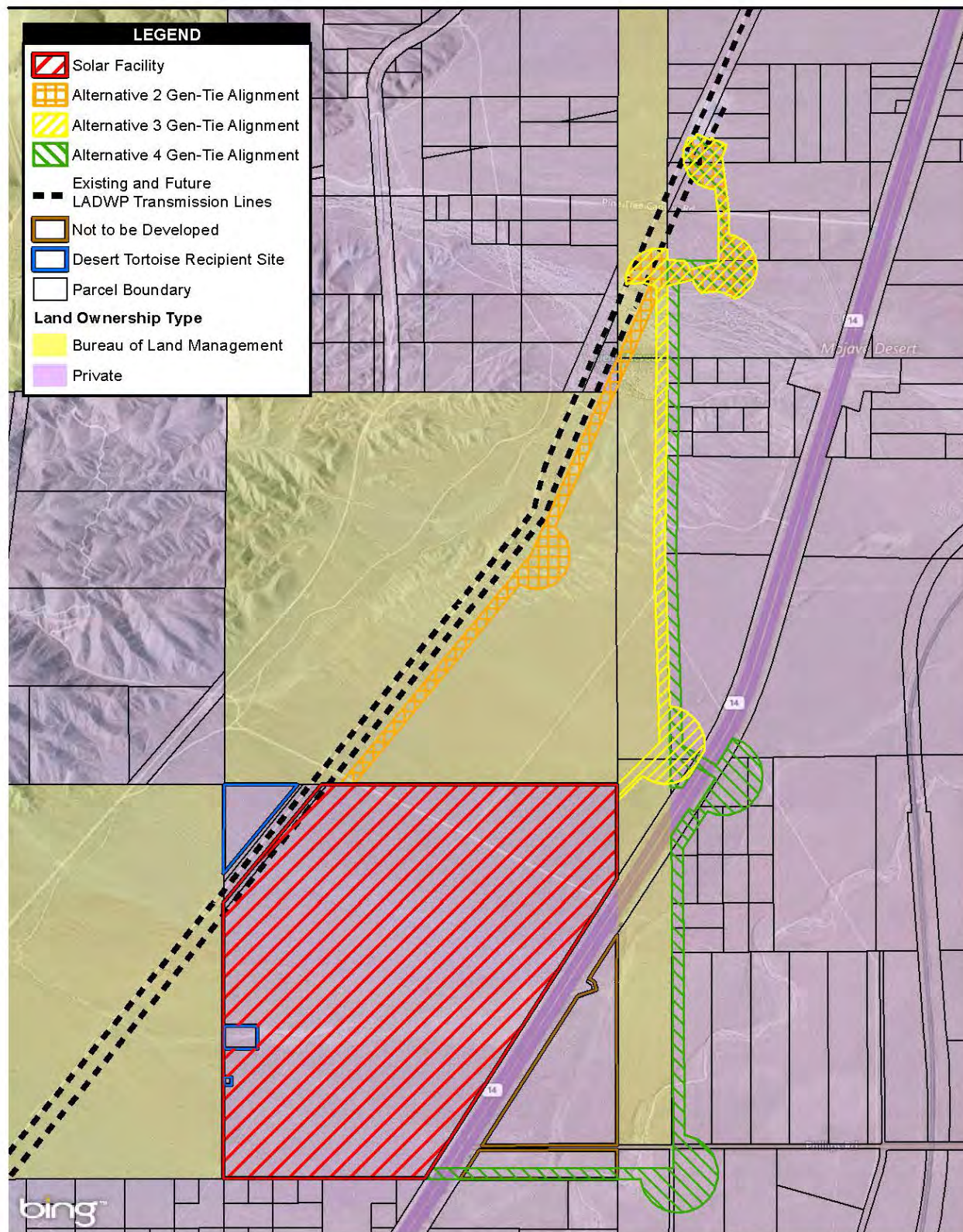
Figure 1-3
Aerial Vicinity Photograph



Source: RE Cinco 2013, Image courtesy of USGS Image courtesy of the Nevada State Mapping Advisory Committee © 2014 Microsoft Corporation © 2014 Nokia © AND



**Figure 1-4
Alternatives**



Source: RE Cinco 2013, Image courtesy of USGS Image courtesy of the Nevada State Mapping Advisory Committee © 2014 Microsoft Corporation © 2014 Nokia © AND

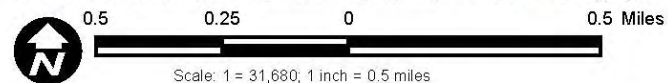


Figure 1-5
Land Ownership

1.4 Purpose and Need for Action

The purpose and need for the proposed USFWS action are as follows:

1. Respond to the Applicant's application for a Section 10(a)(1)(B) ITP for the desert tortoise related to activities occurring during the construction and operation of the proposed solar facility on approximately 500 acres of private lands.
2. Protect, conserve, and enhance desert tortoise and its habitat for the continuing benefit of the people of the United States.
3. Provide a means and take steps to conserve the ecosystems that the desert tortoise depends on.
4. Ensure the long-term survival of the desert tortoise through protection and management of the species and its habitat the West Mojave Recovery Unit.

1.5 Decision to be Made

USFWS will use the results of the analyses in this EA to make an informed decision to approve, approve with modifications or conditions, or disapprove the Applicant's request for incidental take of a species listed as threatened or endangered in accordance with Section 10(a)(1)(B) of the ESA. To determine if the issuance of a permit and approval of the Applicant's HCP is appropriate for this project, USFWS must make several determinations related to various Federal laws and regulations.

1.5.1 Section 10(a)(1)(B) Permit Issuance

USFWS cannot issue a permit for a non-Federal action that may take a federally listed species unless an HCP has been completed that meets all of the following issuance criteria:

1. The taking would be incidental to an otherwise lawful activity.
2. The applicant would minimize and mitigate the impacts of the taking to the maximum extent practicable.
3. The applicant would ensure adequate funding for the HCP and provide procedures to deal with unforeseen circumstances.
4. The taking would not appreciably reduce the likelihood of the survival and recovery of the species in the wild.
5. The applicant would ensure that other measures USFWS may require would be provided for.
6. USFWS has received assurances that the HCP would be implemented.

USFWS must review the Applicant's HCP and prepare a set of findings that addresses each of these criteria. If the HCP fails to meet any one of these criteria, USFWS cannot issue a permit for the proposed action.

1.5.2 Section 7(a)(2) Consultation

As part of its action concerning the proposed gen-tie line that would be located partially on Federal lands, the BLM will make its own decision concerning the issuance of a ROW grant for that use. The BLM is conducting its own NEPA process for that action. Prior to its issuance of an ITP for the solar facility or the BLM's authorization of a ROW grant for the Federal lands gen-tie line, USFWS would consider the effects of both actions (i.e., its own issuance of the ITP for the solar facility and the BLM's ROW grant for the gen-tie line) on the desert tortoise in a single Section 7(a)(2) biological opinion.

1.5.3 National Environmental Policy Act (42 USC 4321)

Because issuance of an ITP by USFWS is a Federal action, USFWS must determine whether that action has a significant effect on the human environment. USFWS determined that an EA is the appropriate level of NEPA analysis for this project. Through the analysis performed in this EA, USFWS will determine whether impacts related to permit-issuance and subsequent HCP implementation are significant. This will help USFWS to determine if permit issuance requires further NEPA analysis in the form of an environmental impact statement or whether a Finding of No Significant Impact is appropriate.

1.5.4 Migratory Bird Treaty Act (16 USC 703 et seq.)

The Migratory Bird Treaty Act (MBTA) protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10). Most actions that result in taking of or the permanent or temporary possession of a protected species constitute violations of the MBTA. USFWS is responsible for overseeing compliance with the MBTA.

1.6 Applicable Authorities

In conjunction with the ESA, USFWS's applicable authorities are as follows:

- Executive Order 13212, dated May 18, 2001, which mandates that agencies act expediently and in a manner consistent with applicable laws to increase the production and transmission of energy in a safe and environmentally sound manner.
- Department of Interior Departmental Manual 517, which provides guidance concerning the authorization and use of pest management practices, including chemical, physical, biological, and cultural tools used to manage pests.
- Secretary of the Interior's Order 3285, adopted in March 2009, in which the Secretary of the Interior issued an order establishing development of renewable energy as a priority

for the Department of Interior. Among other things, the order identified the following actions as priorities for all Department of Interior agencies:

- Identifying electric transmission infrastructure and transmission corridors needed to deliver renewable energy to major population centers.
- Prioritizing permitting and appropriate environmental review of transmission line ROW applications necessary to deliver renewable energy to consumers.
- Tracking agency progress and working to identify and remove obstacles to renewable energy permitting, siting, development, and production.
- Working with states, tribes, local governments, and other interested stakeholders, including renewable generators and transmission and distribution utilities, to identify appropriate areas for generation and necessary transmission.
- Establishing joint, single-point-of-contact offices that consolidate expertise to ensure a coordinated, efficient, and expeditious permitting process while ensuring appropriate siting and compliance with NEPA, the ESA, and other applicable laws.
- Working collaboratively with other Federal agencies, states, and local authorities to coordinate and harmonize permitting processes.

1.7 Issue Scoping

External scoping is optional for EA-level analysis. Department of Interior NEPA regulations (43 CFR 46.235) allow a decision-maker to determine the need for and level of scoping to be conducted for an EA. In this case, the solar project and an alternative gen-tie line using BLM lands was the subject of a comprehensive local public review process in 2011, as described below.

1.7.1 Previous Environmental Analysis and Public Outreach

Kern County Environmental Impact Report

Kern County evaluated a private lands solar project and a connecting gen-tie line in 2011 in an environmental impact report (EIR) prepared in accordance with the California Environmental Quality Act (CEQA) (Kern County Planning and Community Development Department 2011a). The document was circulated for public comment for 45 days, as required by CEQA. The EIR was certified and the project was approved by the Kern County Board of Supervisors in October 2011. As part of that approval, Kern County approved a Conditional Use Permit for the private lands solar facility.

1.7.2 Pre-Application Meeting with Tribes and Interested Parties

The BLM and USFWS co-hosted a pre-application meeting with tribal representatives and other interested parties for the proposed project. The meeting was held with tribal representatives and other interested parties at the BLM's Jawbone Station Visitor's Center on March 24, 2014. Invitation letters to this meeting are included as Appendix A. Participants included Native American tribal representatives, Caltrans representatives, and Cantil Water District representatives. Issues raised during the meeting included the following:

- Caltrans ROW concerns and requirements relating to SR-14.
- Native American participation during project development, cultural resources surveys, and construction.

Based on input received from tribal representatives at this meeting, tribal representatives were invited to participate in the cultural resources surveys for the project. As a result, several tribal members were present during the surveys.

2. PROPOSED ACTION AND ALTERNATIVES

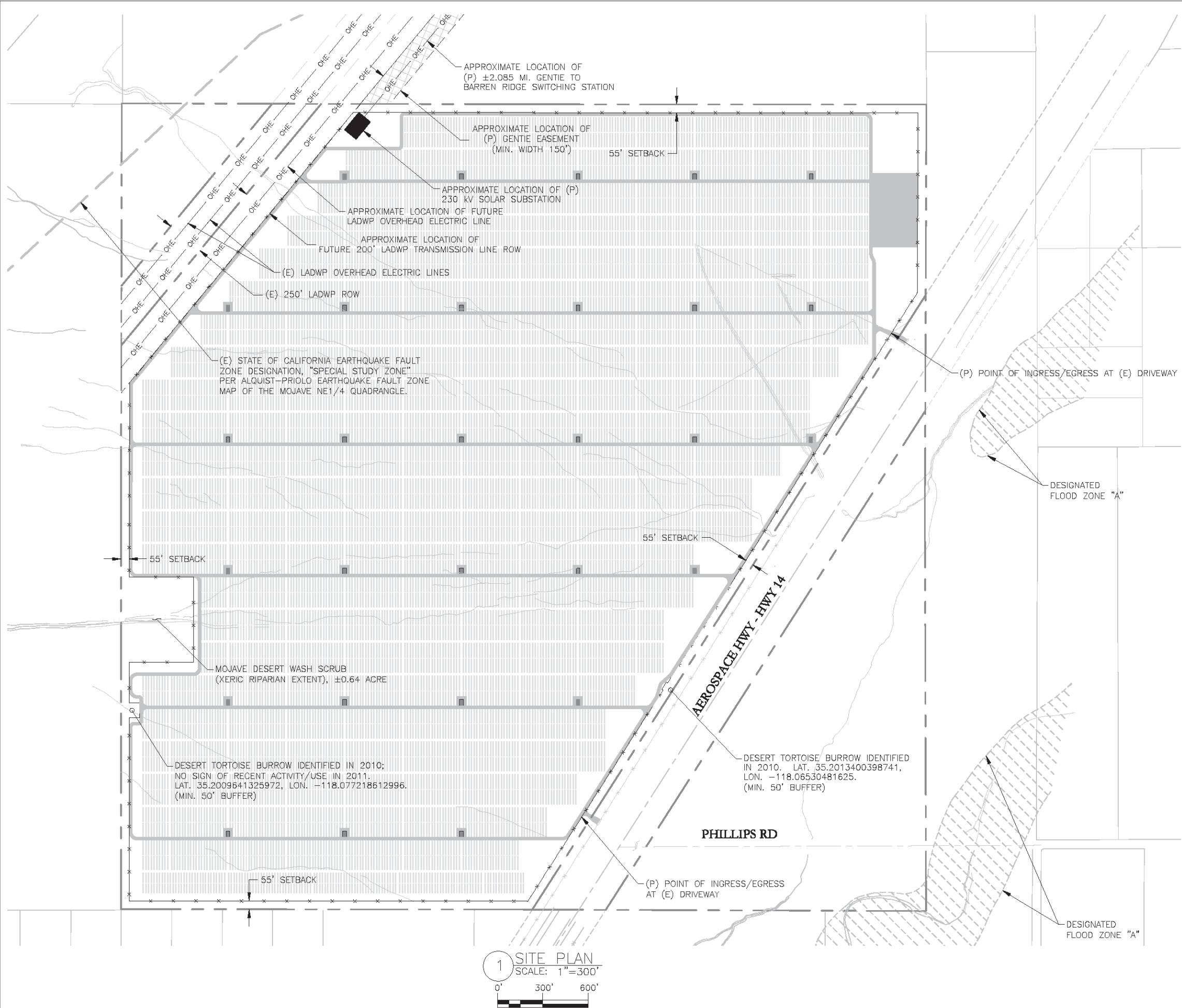
2.1 Alternative 1 – No Action Alternative

Under the No Action Alternative, USFWS would not issue a Section 10(a)(1)(B) ITP. The proposed solar facility and associated gen-tie would not be constructed unless the Applicant could develop an effective strategy to fully avoid take of desert tortoise. If the Applicant were to choose not to move forward with the project, the private lands upon which the solar facility would be located would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan and other applicable regulations. These lands are classified in the General Plan as “Resource Management” lands (Kern County 2009), and are zoned as “A FP” (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012: Chapter 19). Even if this project is not constructed, a number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses (Kern County 2012).

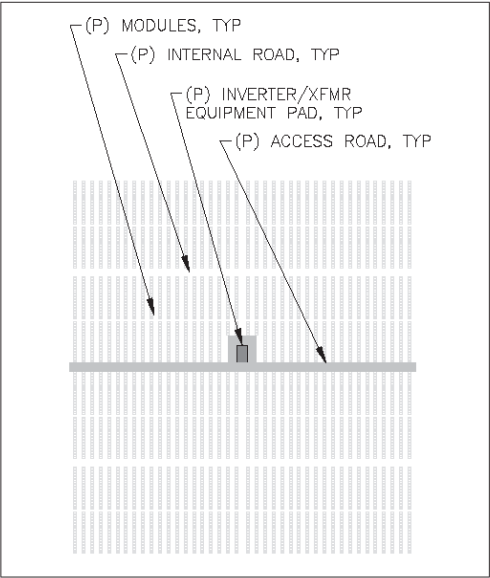
2.2 Alternative 2 – Private Lands Solar Facility Development, Issuance of Incidental Take Permit for Solar Facility Site, and Gen-Tie on Combination of Federal and Private Lands (Preferred Alternative)

The Applicant prepared a proposed HCP as part of the application for an ITP and submitted it to USFWS. The HCP presents a program to avoid, minimize, and mitigate incidental take of desert tortoise potentially resulting from developing, operating, and decommissioning the aforementioned solar facility project components. The HCP is attached to this EA as Appendix C (AECOM 2014g). Under Alternative 2, USFWS would issue an ITP to the Applicant for the covered activities described in the HCP. This would include the construction of a solar facility that would be sited on approximately 500 acres of privately owned land. This alternative assumes that a ROW grant would be issued by the BLM for a connecting gen-tie line across Federal lands from the solar facility site to the Barren Ridge Switching Station, approximately 2 miles to the north. Section 7(a)(2) ESA consultation with USFWS would be initiated by the BLM, and coverage for the take of desert tortoise would be a part of BLM’s own NEPA process and approval action for the ROW grant. As such, the Federal lands gen-tie line alignment would not be a part of USFWS’s Section 10(a)(1)(B) ITP action.

Figure 2-1 shows the facility’s preliminary engineering plan and site layout. The various covered activities associated with the solar facility’s HCP are discussed in detail below.



1 SITE PLAN
SCALE: 1"=300'
0' 300' 600'



2 CONCEPTUAL ARRAY BLOCK
SCALE: 1"=200'

DISCLAIMER
DRAFT. NOT FOR CONSTRUCTION. OWNER MAKES NO REPRESENTATION OR WARRANTY AS TO ACCURACY, SUITABILITY OR CORRECTNESS. MAY CONTAIN ERRORS.

SYSTEM SPECIFICATIONS
MAXIMUM CAPACITY AT POI: 60 MWac
INTERCONNECTION VOLTAGE: 230 kV

LEGEND OF LINETYPES AND SYMBOLS	
---	PROPERTY LINE
-x-x-x-x-	(P) PERIMETER FENCE
---	CONTOUR LINE
—OHE—OHE—	OVERHEAD POWER LINE
- - - - -	(E) EASEMENT
- - - - -	(E) FLOODPLAIN
- - - - -	(E) FAULT ZONE LIMIT
(E)	EXISTING
(P)	PROPOSED
PUE	PUBLIC UTILITY EASEMENT
POI	POINT OF INTERCONNECTION



RECURRENT ENERGY
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SAN FRANCISCO, CALIFORNIA 94104 USA
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CONCEPTUAL
NOT FOR
CONSTRUCTION

ENGINEER'S STAMP

PROPOSED PHOTOVOLTAIC SYSTEM
RE BARREN RIDGE 1 LLC
KERN COUNTY
HWY 14, 8 MI. NORTH OF HWY 58
MOJAVE, CA 93501

FIGURE 2-1

REV	DATE	ISSUED FOR	DATE	BY	CHKD	APPD
1.1	MB	EPC RFP SITE CONSTRAINTS REV 1	3/3/14	MB	MB	MB
1.0	DS	EPC RFP SITE CONSTRAINTS	11/20/13	EG	BM	BM

PROGRAM	100104
SITE NUMBER	001
DESIGN START	08/23/2010
DESIGN MGR.	M. BERGER

0 1/2" 1"
IF BAR IS NOT ONE INCH, DRAWING IS NOT TO SCALE
SHEET
A2.0

2.2.1 Solar Facility Components

Photovoltaic Panels

The solar facility would include an estimated 400,000 photovoltaic (PV) solar panels. Types of panels that could be installed include thin-film panels (including cadmium telluride [CdTe or “cad tel”] and copper indium gallium diselenide [CIGS] technologies), crystalline silicon panels, or other commercially available PV technologies. Solar thermal technology is not being considered. Panel mounting systems that could be installed include either fixed-tilt or tracking technology, depending on the PV panels ultimately selected.

The PV panels would be manufactured at an off-site location and transported to the solar facility site. Panels would be arranged in strings with a maximum height of 12 feet. Panel faces would be minimally reflective, dark in color, and highly absorptive.

Solar Facility Access and Service Roads

Access to the solar facility would be provided from two points adjacent to SR-14, as identified in Figure 2-1. Within the project boundaries, pervious roadways would provide access to the PV panels and substation. These roads would provide a fire buffer in accordance with the requirements of the Kern County Fire Department, and they would accommodate project operations and maintenance (O&M) activities and facilitate on-site circulation for emergency vehicles. O&M roads would be constructed to accommodate passenger vehicles and light-duty utility vehicles or pickup trucks.

The solar facility on-site roadway system would include a perimeter road, access roads, and internal roads. The perimeter road and main access roads would be 16 to 20 feet in width and constructed to be consistent with facility maintenance requirements and Kern County Fire Department standards. Internal roads would have permeable surfaces and be approximately 12 to 20 feet in width. The only paved portion of the access road system would be the entrance driveway off of SR-14. Trafficked roads would be treated to create a durable, dustless surface for use during construction and O&M. Kern County Fire Department access to the site would be provided for emergency response via compliant locked gates.

Standard Installation, Array Assembly, and Racking

The structures supporting the PV panel arrays at the solar facility would consist of steel piles (e.g., cylindrical pipes, H-beams, or similar), which would be driven into the soil using pneumatic techniques such as a hydraulic rock hammer attachment on the boom of a rubber-tired backhoe excavator. In some cases, depending on the geotechnical conditions at each microsite, pre-drilling of support structure holes with a drill rig could be required. The piles would typically be spaced 10 feet apart and installed to a revealed height of approximately 4 feet above grade.

Upon installation of the piles, the horizontal cross-members of the tracking system and associated motors would be placed and secured. A galvanized metal racking system, which holds

the PV panels in the correct position for maximum capture of solar irradiance, would then be field assembled and attached to the horizontal cross members.

Fixed-tilt arrays would be oriented along an east/west axis, with panels facing generally south, and tracking arrays would be oriented along a north/south axis, with panels tracking east to west. The total height of the panel system measured from the ground surface would be up to 12 feet. Figure 2-1 shows an elevation drawing of the solar panels and tracking system.

Electrical Collection, Inverters, and Transformers

Panels would be electrically connected into panel strings using wiring attached to the panel racking system. Panel strings would be electrically connected to one another via underground wiring installed from the panel strings to combiner boxes located throughout the PV arrays. Underground cables would be installed to convey the direct current electricity from the combiner boxes to inverters that would convert the direct current to alternating current. The output voltage of the inverters would be stepped up to the collection system voltage via transformers located in proximity to the inverters. Underground electrical cables would be installed from the transformers to the substation, which is described further below. The underground cables would be installed using ordinary trenching techniques, which would typically include a rubber-tired backhoe excavator or trencher. Wire depths would be in accordance with local, State, and Federal codes, and would be buried up to 4 feet below grade by excavating a trench wide enough to accommodate the cables. A polyvinyl chloride (PVC) conduit could be installed in the trench, or, alternatively, cable rated for direct burial would be installed. Upon installation of the cables, the excavated soils would be used to backfill the trench and lightly compressed.

The solar facility would be designed and laid out in approximately 2 MW increments. Each 2 MW increment would include an inverter-transformer station centrally located within the PV arrays. All electrical inverters and transformers would be placed on concrete pads or steel skids. Inverter pads would result in an estimated maximum of 1 acre of impervious surfaces at the solar facility site.

Electrical Substation

An on-site substation would convert generated power from 34.5 kV to 230 kV. The substation areas would be graded and compacted to an approximately level grade. Concrete pads would be constructed on-site as foundations for substation equipment, and the remaining area would be graveled. Substation transformers would contain mineral oil, and the substation would be designed to accommodate an accidental spill of transformer fluid by the use of containment-style mounting. No PCB-laden fluids would be used. The substation would result in an estimated maximum of 2 acres of impervious surfaces at the solar facility site.

The substation area would be excavated for the transformer equipment, control building foundation, and oil containment area. Concrete would be poured on-site to create foundations. Structural components in the substation area would consist of the following:

- Power transformer
- Footing and oil containment system for power transformer
- Pre-fabricated control enclosure to enclose the protection and control equipment
- Footings for the control enclosure structure
- Metering stand
- Capacitor bank
- Circuit breaker and air disconnect switches
- Dead-end structures to connect the substation to the gen-tie line

The substation's location at the northwest corner of the solar facility site was selected to facilitate connection to the associated gen-tie line and also to reduce visual impacts, particularly when viewed from vantage points such as SR-14. In addition, surface coatings of permanent structures would use BLM environmental colors (Standard Environmental Colors, Color Chart CC-001) (BLM 2008) or an appropriate substitute that would meet the intent of the BLM color palette by minimizing contrast with surrounding visual elements. This design feature would not apply to the PV surfaces, which cannot be painted or coated, but would be directed toward other structures at the site, such as buildings, gates, and tanks.

Telecommunications

The project would be designed with a comprehensive Supervisory Control and Data Acquisition (SCADA) system to allow remote monitoring of facility operation and/or remote control of critical components. Within the solar facility site, the fiber-optic or other cabling required for the monitoring system would typically be installed in buried conduit, leading to a centrally located (or series of appropriately located) SCADA system cabinets. External telecommunications connections to the SCADA system cabinets could be through either wireless or hard-wired connections to locally available commercial service providers. The solar facility would include telecommunications equipment such as microwave facilities mounted on an approximately 100-foot-tall steel support structure to provide line-of-sight communications with the LADWP Barren Ridge Switching Station.

Battery Storage System

Battery storage systems are needed to assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid, and can assist utilities in their efforts to meet energy storage goals. The project would optionally include a battery storage system capable of storing up to 60 MW of electricity, consisting of battery banks housed in electrical enclosures and buried electrical conduit. The battery system would be located adjacent to the substation. Up to 480 electrical enclosures measuring 40 feet by 8 feet by 8.5 feet high would be installed on concrete foundations designed for secondary containment, representing up to 5 acres of impervious surface area.

Meteorological Data Collection System

The solar facility would include a meteorological data collection system. Each meteorological station would have multiple weather sensors: a pyranometer for measuring solar irradiance, a thermometer to measure air temperature, a barometric pressure sensor, and wind sensors to measure speed and direction. The 4-foot horizontal cross-arm of each meteorological system would include the pyranometer mounted on the left side and the two wind sensors installed on a vertical mast to the right. The temperature sensor would be mounted inside the solar shield behind the main mast. Each sensor would be connected by cable to a data logger inside the enclosure.

Operations and Maintenance Buildings and Electrical Control Buildings

An O&M building and an electrical control building would be required for on-site monitoring and control of the solar facility and to accommodate permanent staff. The O&M and control buildings would be constructed on concrete foundations, and would result in an estimated maximum total of 1 acre of impervious surfaces. The dimensions of the O&M building would be approximately 40 feet by 50 feet. A compacted dirt parking area would be located adjacent to the O&M building. Potable water for O&M staff would be trucked in from off-site and stored in a small water tank adjacent to the O&M building. The solar facility would be equipped with portable toilets for O&M staff; a septic system would not be constructed on-site.

Security Fencing and Lighting

The solar facility site would be secured by a 6-foot-high chain-link perimeter fence topped with 1 foot of barbed wire. Wildlife exclusion fencing would be incorporated into the perimeter fence design. The solar facility would include two access points with locked gates that would be fully accessible by emergency responders. Motion-sensitive directional security lights would be installed to provide adequate illumination around the substation area, each inverter cluster, the battery storage cluster, at gates, and along perimeter fencing. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. All lighting would conform to applicable Kern County rules and regulations for outdoor lighting.

Night lighting would be triggered only by human and vehicle movements, and would not be triggered by wildlife. The facility would not be illuminated except when humans are present.

2.2.2 Solar Facility Construction

Pre-construction compliance would entail preparation of all applicable environmental management plans, installation of the entry driveway, clearing and leveling of a small (0.25-acre) staging area, and installation of permanent desert tortoise exclusion fencing. Installation of tortoise fencing would require clearing and grading a 30-foot-wide area around the perimeter of the site. This activity would be performed under the supervision of a biological monitor, and would require the use of a mini-excavator (i.e., a Bobcat) and a water truck, and would occur over a 1- to 4-week period.

Solar facility construction would proceed in three phases:

- *Phase 1: Site Preparation*
- *Phase 2: PV System Installation*
- *Phase 3: Inverters, Substation, and System Interconnection*

Phase 1 – Site Preparation

Site preparation would include preparation of the laydown areas, construction of the internal access roads, preparation of the PV field, preparation of the substation, installation of the array posts, installation of the conduits, construction of the relay house, construction of the O&M building, and installation of the perimeter fence.

A construction staging area would be established for construction personnel and the secure storage of equipment, and would be in the same location as the future substation (see Figure 2-1). A permanent O&M building would also be constructed during the site preparation phase. The location of the O&M building is shown in Figure 2-1.

Equipment storage during construction could involve locking containers, additional temporary fencing, and other methods of protection. Temporary air-conditioned construction offices would be trucked in, along with a first aid station for site personnel. Potable water and portable toilets would be delivered to the site for use during construction and O&M.

Construction access road locations would correspond to the future internal access roads. The roads would be 20 feet wide and would consist of compacted native material surfaced with gravel or compacted soil. A stabilized entrance/exit would be provided to clean vehicle wheels prior to exiting the construction area.

Although minimal site grading would occur on the solar facility site, there is potential that the entire site would be disturbed to at least a minimal degree. Minimal cut and/or fill are anticipated to be needed and, if required, would be expected to be balanced on-site.

Erosion control, drainage plans, and storm water management plans/mitigation would be implemented pursuant to Kern County-approved grading plans and Kern County and State guidelines. Drainage improvements would be minimal and would be limited to the management of flows across the site. Dust control oversight would use best practices in accordance with Kern County guidelines. A dust palliative would be used as needed to minimize emissions of dust from the site, as required by Kern County.

Permanent fencing would be constructed around the site during site preparation and would remain in place for security reasons during operation of the solar facility. All perimeter fencing would include desert tortoise exclusion fencing constructed in accordance with USFWS specifications.

Phase 2 – PV System Installation

Following completion of clearing and grading, underground and aboveground work would commence. Underground cabling would be trenched and flagged/staked as aboveground teams survey and plan array boundaries and string locations.

System installation would begin with teams installing the mounting and support structures, which would incorporate steel/concrete piers driven 8 or more feet into the ground. The exact design would be finalized pending specific soil conditions, and the methods could include pile-driving and/or vibration-driven screw piles and aboveground ballast foundations. After installation of the support structures, PV panel installation and electrical work would commence.

The inverters would be constructed on concrete pads or steel skids. The footings, foundations, and pads for the substation would be constructed with concrete obtained from an off-site source.

Electrical conduits and electrical wiring would be installed and buried in designated areas throughout the site. Trenching to a depth of 4 feet is expected to be required to bury underground conduits and wiring, but exact depths would be determined by final detailed engineering design.

Phase 3 – Inverters, Substation, and System Interconnection

The final stage of construction would involve installation of inverters and substation equipment, installation of the electrical conduit and collection system, installation of the battery system, system testing and commissioning, site cleanup, and demobilization of the construction effort. Kern County would inspect the site and sign off on the building permits. All debris would be removed from the site and disposed of properly. Where appropriate, revegetation would be implemented prior to construction completion.

2.2.3 Solar Facility Construction Schedule

Pre-construction activities for the solar facility would begin in early 2015 and be completed in approximately 3 to 4 months. This would involve minimal ground disturbance for installation of desert tortoise exclusion fencing, driveway construction, and preliminary equipment staging.

Construction of the solar facility would commence in spring 2015, and would be complete in late 2015. The total duration of solar facility construction would be a minimum of 9 months. Up to 1,200 truck round trips would be required for equipment delivery during Phases 1 and 2, with up to 10 delivery trucks required on any given day. For specific details on the schedule, phasing, and vehicle trips, see the HCP, included with this EA as Appendix C (AECOM 2014g).

Construction Access and Equipment

All materials for project construction would be delivered by truck. The majority of truck traffic would occur on designated truck routes and major streets. Flatbed trailers and trucks would be used to transport construction equipment and materials to the site. The project components would be assembled on-site. Traffic resulting from construction activities would be temporary and would occur along SR-14 as workers and materials are transported to and from the solar facility site.

During project construction and operations, water use would be purchased and trucked in from a nearby irrigation district or municipal water district. During construction, it is anticipated that up to 400 acre-feet would be used per year for construction purposes and dust suppression (including truck wheel washing).

Equipment to be used for the construction of the solar facility is detailed in Table 2-1.

Table 2-1. Solar Facility On-Site Equipment and Vehicle Use During Construction	
Equipment	Estimated Units
Phase 1: Site Preparation	
Bulldozers	52
Water Trucks	48
Graders	28
Flatbeds	10
Skid Steers	6
Front End Loaders	4
Roller Compactor	25
Water Buffaloes	2
Trenchers	4
Backhoes	3
Gravel Trucks	13
Phase 2: Photovoltaic Panel System Installation	
Pickup Trucks	12
Water Trucks	10
Flatbeds	60
Skid Steers	8

Table 2-1. Solar Facility On-Site Equipment and Vehicle Use During Construction	
Equipment	Estimated Units
Pile Drivers	8
Forklifts	55
Welders	20
Trenchers	10
Phase 3: Installation of Inverters, Substation, and Connection	
Skid Steer	1
Pile Drivers	2
Trenchers	8
Backhoes	2
Cranes	3
Aerial Lifts	5
Concrete Trucks	10

Site Restoration and Revegetation

Native vegetation would be allowed to reestablish after construction. Noxious weeds would be managed in accordance with a weed management plan.

Construction Waste Recycling

Construction waste would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they can be transported to a designated recycling facility. It is anticipated that at least 20% of construction waste would be recyclable, and 50% of those materials would be recycled. Hazardous waste and electrical waste would be transported to a hazardous waste handling facility (e.g., electronic waste recycling). All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

2.2.4 Project Operation

Operation, Security, Monitoring, and Maintenance

Upon commissioning, the project would enter the operations phase. The solar panels at the site would operate during daylight, 365 days per year, 7 days per week. The system would require routine and periodic maintenance. O&M activities at the solar facility would include the following:

- Solar panel washing
- Panel repairs
- Maintenance of transformers, inverters, and other electrical equipment
- Weed management

- Waste pickup and disposal
- Periodic tortoise exclusion fence inspection, repairs, and maintenance
- Responding to automated alarms based on monitored data, including actual versus expected tolerances for system output and other key performance metrics
- Communicating with customers, transmission system operators, and other entities involved in facility operations

Security measures would be taken to ensure the safety of the public and the solar facility. The facility would be fenced along all perimeters, with specified points of ingress and egress. A 6-foot-tall chain-link galvanized metal perimeter fence would likely be topped with 1 foot of standard three-strand barbed wire. Fence posts would be drilled and grouted or driven pneumatically into the soil profile. The vehicle access gate would remain locked when not in use. Daytime security would be provided by on-site O&M staff. Off-site security personnel could be dispatched during nighttime hours or could be on-site, depending on security risks and operating needs. Security cameras may be placed along the perimeter of the facility and at other specified locations. Any security cameras located at inverters and battery storage clusters would be posted on poles approximately 20 feet in height.

Vegetation and Weed Management

A vegetation management and weed abatement program would be implemented to control vegetation within work zones and access roads, and to minimize potential impacts from invasive plants. Based on the aridity of the area and the overall low densities of vegetation present, it is not likely that vegetation would encroach upon structures in such a manner that access would be impaired. However, noxious weeds could create a fire hazard if allowed to become established, and invasive weeds could also become problematic from a biological perspective. Therefore, weed control activities would be implemented, as needed.

Weed control activities would include manual (hand), mechanical (mechanized equipment), and herbicide control. Manual control of weeds would involve use of hand tools such as shovels or hoes. Mechanical control would primarily involve the use of line trimmers for mowing weeds. Typically, mowing would only be used if weed species have flowered and it is too late to use herbicides. At that point, mowing would be used to cut and remove vegetation before seeds are released into the environment. The use of large high-deck mowers or other large mechanized equipment is not proposed. Herbicides would be necessary to control the spread of invasive weeds following construction disturbance as part of an integrated pest management strategy. Herbicide control would include the following:

- Herbicide proposed for use would be limited to the Monsanto glyphosate products Roundup PRO® or AquaMaster® herbicides, with Roundup PRO applied in the upland

portions of the ROW and AquaMaster applied in the potentially jurisdictional areas or drainages.

- Triclopyr may be used as an alternative treatment chemical, if needed, and would be applied at the manufacturer's recommended typical application rate.
- Herbicide would only be applied by hand from a backpack sprayer or truck-mounted spray rig. The spray rig would use individual lines that are applied directly by hand and would not use a truck-mounted boom sprayer.
- The maximum rate of application for Roundup would be 10.6 quarts per 1 acre per year.
- The intended rate of application is 2% solution for Roundup.
- Application dates would be intended for a full 5-year weed control program, beginning during the construction phase, if needed.
- Treatments would be as needed upon emergence of the target weed species during the growing season. Growing seasons are typically during the winter months (November through April), but may include the summer months (July through September) if summer rainfall is sufficient to germinate target weed species.
- The total number of applications would be dependent on the extent of weeds within the disturbance areas, but it is expected that three or more treatment efforts would be required per year. Treatment efforts can be defined as one round of complete coverage for the entire gen-tie line ROW within BLM lands. Rainfall amounts would determine the number of treatment efforts that would be needed, but it is assumed that there would be weed control visits conducted no more than once a month during the winter spring season. Based on these basic assumptions (three visits per year), there would be approximately 105 annual treatments for the gen-tie line ROW for a 35-year operating period.
- The primary nonnative species to be targeted are Saharan mustard (*Brassica tournefortii*), Russian thistle (*Salsola tragus*), Mediterranean grass (*Schismus* spp.), and storksbill (*Erodium* spp.). Additional nonnative plant species may be identified during monitoring efforts, and these would also be targeted for control efforts.
- Crews that conduct weed treatment would have extensive experience working on sensitive habitats and species. In addition, crews would be supervised by a restoration ecologist and a desert tortoise monitor. Weed control would be specifically applied to individual plants and not sprayed broadly across the site.

- Crews would work under the direct supervision of a licensed Certified Pesticide Applicator.
- Crews would adhere to strict application guidelines when applying herbicide during wind to minimize drift and chemical contact with non-target vegetation and wildlife. Herbicide application would be suspended if winds are in excess of 6 miles per hour, or if precipitation is occurring or imminent (predicted within the next 24 hours).
- The chemicals chosen (glyphosates and triclopyr) were identified for use due to the low likelihood of toxicity on wildlife species, in particular, desert tortoise. The potential for ingestion of recently treated plants is present; however, an on-site restoration ecologist and tortoise-specific monitors would minimize this risk. After treatment, the herbicide would dry rapidly in the desert environment to further minimize the risk.

Operations Equipment and Employment

It is anticipated that solar facility O&M activities would require up to two workers on-site at any one time. However, on intermittent occasions, up to 12 workers could be required for repairs or replacement of equipment, or during panel washing operations. A record of inspections would be kept on-site. The duration of maintenance activities would vary, but would typically occur for up to 2 weeks at a time, four times annually for panel washing, and a similar number and duration for workers regularly visiting the site for routine maintenance activities. Routine operations equipment would include light-duty automobiles and trucks, forklifts, flatbed trucks, and other equipment. Periodic maintenance activities would be infrequent, but could require the use of heavy-duty equipment, depending on the circumstances.

2.2.5 Project Decommissioning and Site Reclamation

The solar facility is anticipated to have a life of approximately 40 years. At the end of facility's life, it would either be repowered or decommissioned. Repowering is not anticipated at this time; however, if repowering were to be pursued, it would require the facility owner to obtain all required permit approvals. Decommissioning would involve the removal of all above-grade facilities, buried electrical conduit, and concrete foundations in accordance with a decommissioning plan. Native vegetation that had been allowed to reestablish during solar facility operations would be allowed to remain to the extent practicable.

In the event that a structure breaks off 4 feet or more beneath the ground surface, the remaining section would be left in place. If the structure breaks off in the upper 4-foot portion of soil, it would be excavated and removed. Equipment would be repurposed off-site, recycled, or disposed of in a landfill. Decommissioning would involve the use of heavy equipment and personnel similar to what is described for the construction phase, although for a shorter duration and intensity.

Site restoration activities would be conducted in compliance with a decommissioning plan, which would be prepared in coordination with USFWS, the California Department of Fish and Wildlife (CDFW), and Kern County, and could include some soil decompaction, minor site recontouring, revegetation, and noxious weed management activities.

2.2.6 Solar Facility Habitat Conservation Plan

The HCP presents a program to avoid, minimize, and mitigate incidental take of desert tortoise potentially resulting from developing, operating, and decommissioning the above-described solar facility project components. The discussion below outlines the features of the HCP.

Incidental Take Permit Applicant/Permit Duration

The permit Applicant is RE Barren Ridge 1, LLC. The Applicant would become the sole permit holder if USFWS were to issue the ITP. Activities covered by the HCP, discussed further below, would be implemented by Applicant employees or by contractors working under Applicant supervision.

The Applicant has requested authorization for incidental take of desert tortoise for 40 years. The anticipated life of the Power Purchase Agreement for the solar facility is approximately 20 to 25 years, but the operational life span of the solar facility is anticipated to be 40 years.

Following expiration of the solar facility's Power Purchase Agreement, the Applicant could, at its discretion, choose to enter into a subsequent Power Purchase Agreement, update technology, and recommission the facility, or decommission and remove the system and its components.

The 40-year period for the ITP was developed in consideration of the "Five-Point Policy" (65 *Federal Register* 35242). The Applicant determined that 40 years would be sufficient for construction, operation, decommissioning, and reclamation of the project, and to implement avoidance, minimization, and mitigation measures. In addition, predicting effects of the project beyond 40 years would be difficult because the distribution and listing status of desert tortoise could change over time. For this same reason, amendments to the ITP might be required for periods beyond 40 years. The Applicant may apply to amend the HCP and ITP at the end of the 40-year permit term.

Incidental Take Permit Boundary

The permit boundary is generally defined as the 598-acre privately owned parcel that would include the constructed solar facility. Potential relocation of desert tortoise would occur within undeveloped portions of the parcel. The parcel would be accessed via two existing dirt roads off the west side of SR-14. Mitigation lands acquired for impacts resulting from the project and areas needed for potential relocation of desert tortoise would be included as part of the permit boundary. Given that mitigation lands have not yet been identified, descriptions of the permit boundary herein are generally limited to the 598-acre privately owned parcel and vicinity.

HCP Covered Species

The HCP and proposed ITP would cover the federally threatened desert tortoise. The potential for federally listed species and other sensitive species to occur within the permit boundary was evaluated based on the Biological Resources Assessment for the RE Kern County Desert Solar Projects (Rincon Consultants 2011a); the Supplemental Biological Results: RE Rosamond One and Two, RE Barren Ridge 1 (Rincon Consultants 2011b); and a database search of the California Natural Diversity Database for known occurrences within a 10-mile radius of the solar facility site (CDFW 2013). Desert tortoise is the only federally listed species known to occur within the vicinity of the project.

HCP Requirements and Guidelines

ESA Section 10 and implementing regulations require that any HCP submitted in support of an ITP application include the following information:

- A complete description of the activity to be permitted
- A description of the species to be covered by the permit
- Impacts likely to result from the proposed take of the species for which permit coverage is requested
- Measures that will be implemented to monitor, minimize, and mitigate impacts; funding that will be made available to undertake such measures; and procedures to deal with unforeseen circumstances
- Alternatives to the proposed take that were considered and the reasons why such alternatives are not proposed to be used
- Additional measures that USFWS may require as necessary or appropriate for purposes of the HCP

Once an ITP is issued, the permit holder would implement the HCP by monitoring the effects of the covered activities, funding and monitoring the conservation plan, reporting to USFWS, and implementing other permit terms and conditions. USFWS would monitor the permittee's compliance with the HCP permit terms and conditions, and the long-term progress and success of the HCP.

HCP Conservation Program

Biological Goals

Section 10(a)(2)(A) of the ESA requires that a conservation plan specify the measures that a permittee will take to minimize and mitigate, to the maximum extent practicable, the impacts of the taking of any federally listed species as a result of activities addressed by the HCP. As part of

the “Five-Point” Policy adopted by USFWS in 2000, HCPs must establish biological goals and objectives (65 Federal Register 35242). The purpose of the biological goals is to ensure that the operating conservation program in the HCP is consistent with the conservation and recovery goals established for the species, which are recovery and delisting (USFWS 1994, 2011). As stated in the revised desert tortoise recovery plan (USFWS 2011), the conservation and recovery goals for the species are as follows:

- Maintain self-sustaining populations of desert tortoise within each recovery unit into the future.
- Maintain well-distributed populations of desert tortoise throughout each recovery unit.
- Ensure that habitat within each recovery unit is protected and managed to support long-term viability of desert tortoise populations.

The biological goals of the proposed HCP are listed below and pertain to the permit boundary. Biological goals have been established to support the recovery goals of desert tortoise (as listed above).

- *Goal 1:* Implement project-specific measures to avoid and minimize adverse effects to desert tortoise and its habitat during construction and operation of the solar facility, and management of mitigation lands.
- *Goal 2:* Purchase mitigation credits and/or place conservation easements on private lands at a USFWS-approved location to compensate for unavoidable adverse effects to desert tortoise habitat from construction and operation of the solar facility.

Biological Objectives

Biological objectives of an HCP are measurable components that are necessary to achieve a biological goal. To accomplish the biological goals for desert tortoise, the Applicant would implement the biological objectives summarized below.

Biological Objectives to Satisfy Biological Goal 1:

The Applicant has identified the following biological objectives to satisfy Biological Goal 1 for desert tortoise:

- *Objective 1:* Implement project design features to construct, operate, and decommission the solar facility in a manner that minimizes potential adverse effects on biological resources, including desert tortoise and its habitat.

- *Objective 2:* Implement all avoidance and minimization measures outlined in the HCP to further prevent and minimize the likelihood of desert tortoises being injured or killed during construction and operation of the solar facility.

Project design features include measures and actions that would be implemented to address specific impacts that may result from project implementation. The following project design features would be implemented and are applicable to biological resources, including desert tortoise:

- Storm water pollution prevention
- Hazardous substance management
- Weed management
- Raven management

Details concerning these project design features are described more fully in Section 2.1.2 of the HCP, which is attached to this EA as Appendix C (AECOM 2014g). Implementation of these project design features would ensure that habitat suitability of undeveloped portions of the project site and immediate vicinity would not substantially depreciate as a result of project implementation. Hazardous substance and raven management would reduce the potential for desert tortoise individuals to be killed or injured within the permit boundary during construction and operation of the solar facility.

Table 2-2 identifies avoidance and minimization measures intended to reduce effects of covered activities on desert tortoise. As noted in the table, clearance surveys and relocation of desert tortoises found in harm's way would be important aspects of the Applicant's effort to avoid and minimize effects to the species. Protocols for conducting clearance surveys and relocating desert tortoises would be consistent with the project's Desert Tortoise Relocation Plan (included as Appendix A of the attached HCP) and USFWS guidelines (USFWS 2009). Desert tortoises found during clearance surveys for the solar facility would be relocated to suitable habitat within one of three potential recipient sites located outside of exclusion fencing but within the 598-acre parcel owned by the Applicant. Potential recipient sites are depicted in Figure 1-2. Exclusion fencing surrounding the solar facility would prevent relocated tortoises from returning to the solar facility, thereby reducing the potential for tortoises to be injured or killed during construction and operation of the solar facility.

In addition, designation of an Authorized Biologist to monitor ground-disturbing covered activities is a critical aspect for avoiding and minimizing effects to desert tortoise. The Authorized Biologist would be responsible for ensuring compliance with the avoidance and minimization measures identified in Table 2-2, and for communicating compliance issues to the

Applicant and USFWS. The Authorized Biologist, through coordination with the Applicant and USFWS, would assist with resolving potential conflicts with desert tortoise in the most environmentally sensitive manner.

Table 2-2. Avoidance and Minimization Measures Applicable to the Solar Facility		
Measure Acronym	Measure Description	Timing
<i>General Measures (GM)</i>		
GM-1	The construction contractor(s)/crew(s) will be educated about the biological constraints of the Project by an Authorized Biologist (AB) or Biological Monitors (BMs) under the direction of an AB. All project personnel working in the project area will attend a Worker Environmental Awareness Program (WEAP), developed and presented by a project biologist prior to the commencement of construction activity. Logs of personnel who have taken the training will be kept on-site at the construction office.	Pre-construction
GM-3	New roads planned for construction will not extend beyond the planned impact area that will be flagged prior to construction. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.	Pre-construction, construction, decommissioning
GM-4	Spoils (i.e., excavated material such as topsoil and rock) will be stockpiled in disturbed areas presently lacking native vegetation. Stockpile areas will be marked to define the limits of where stockpiling can occur.	Pre-construction, construction, operations and maintenance (O&M), decommissioning
GM-5	Erosion and sediment control best management practices (BMPs) will be employed to minimize impacts during construction, operations and maintenance (O&M), and decommissioning.	Construction, O&M, decommissioning
GM-6	Fueling of equipment during all phases of the project will take place within the solar facility. Equipment will be checked for leaks prior to operation and repaired as necessary. Spill kits will be available at the solar facility to respond to potential and actual spills in accordance with the Storm Water Pollution Prevention Plan BMPs.	Pre-construction, construction, O&M, decommissioning
GM-7	Construction activities and ground-disturbing operations and maintenance activities outside of desert tortoise exclusion fencing will be monitored by one or more ABs. A designated lead AB will have the ultimate responsibility for these avoidance and minimization measures.	Pre-construction, construction, O&M (only as specified), decommissioning
GM-8	The Applicant will control the introduction of exotic plant species by implementation of weed control activities. The introduction of exotic plant species will be avoided and controlled wherever possible, and may be achieved through physical or chemical removal and prevention, limiting the size of any vegetation and/or ground disturbance to the absolute minimum, and limiting ingress and egress to defined routes. Preventing exotic plants from entering the project site via vehicular sources will include measures such as implementing methods of vehicle cleaning for vehicles coming and going from the project site. Earth-moving equipment will be cleaned and inspected prior to transport to the project site.	Construction, O&M, decommissioning

Table 2-2. Avoidance and Minimization Measures Applicable to the Solar Facility		
Measure Acronym	Measure Description	Timing
<i>Desert Tortoise Measures (DT)</i>		
DT-1	Prior to construction activities, the Applicant will prepare a site-specific Desert Tortoise Relocation Plan. The plan will provide details on desert tortoise clearance surveys and relocation, and will be consistent with current U.S. Fish and Wildlife Service (USFWS) guidelines (USFWS 2009). The Desert Tortoise Relocation Plan is included as Appendix A of this Habitat Conservation Plan.	Pre-construction
DT-2	The Applicant will submit the name and statement of qualifications in accordance with USFWS format of all proposed ABs to the applicable resource agency representatives for review and approval at least 30 days prior to initiation of any ground-disturbing activities and pre-activity surveys. Project construction activities will not begin until the ABs are approved by all agencies. ABs will lead the handling and relocation of desert tortoise when necessary. BMs will ensure compliance with the protection measures, but may only assist with clearance surveys under the direction of an AB. BMs may handle desert tortoises at the discretion and under the supervision of an AB. Workers will immediately notify the AB or BM of all desert tortoise observations. The ABs may be replaced with a new AB at any time during construction, O&M, or decommissioning with 30 days notification to all agencies. If there are unforeseen circumstances (e.g., AB becomes ill, changes jobs, etc.), agencies may be provided 14 days notification.	Pre-construction
DT-3	Prior to ground disturbance at the solar facility, the solar facility will be fenced with permanent desert tortoise exclusion fencing to keep desert tortoises in neighboring habitat from entering the facility during construction, O&M, and decommissioning phases. Where the location of desert tortoise exclusion fencing corresponds to the solar facility perimeter security fence, it may be attached to the security fencing. The exclusion fence will follow current fence specifications established by USFWS (USFWS 2009). Where fence burial is not possible, the mesh will be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent desert tortoise from digging under the fence. Desert tortoise exclusion gates will be established at all solar facility entry points. Temporary fencing will be installed where necessary for each Project component during construction activities to prevent desert tortoise entry during construction. Temporary fencing will follow guidelines for permanent fencing, and supporting stakes will be sufficiently spaced to maintain fence integrity. Clearance of the desert tortoise exclusion fencing location must occur within 24 hours prior to fence installation. All desert tortoise exclusion fence construction will be monitored by a BM to ensure that no desert tortoise is harmed. Following installation, the fencing will be inspected monthly and immediately after all major rainfall events. Any damage to the fencing will be temporarily repaired immediately and permanently repaired within 3 days of observing the damage and reported to the resource agencies to determine whether additional measures are necessary. Ground-disturbing activities at the solar facility may begin immediately after fence installation and tortoise clearance and relocation.	Pre-construction

Table 2-2. Avoidance and Minimization Measures Applicable to the Solar Facility		
Measure Acronym	Measure Description	Timing
DT-4	After fence installation, ABs or BMs under the direction of an AB will conduct clearance survey for desert tortoise within the fenced solar facility. A minimum of two surveys without finding any desert tortoise or new desert tortoise sign must occur prior to declaring the site clear of desert tortoise. All burrows that could provide shelter for desert tortoise will be excavated during the first clearance survey. Any desert tortoise found within the fenced solar facility will be moved to a location in accordance with the Project's Desert Tortoise Relocation Plan (Appendix A).	Pre-construction
DT-6	Following clearance surveys, the AB will prepare a report that documents the survey methods used, names of surveyors, timing, weather, handling methods, capture and release locations of all desert tortoise found, individual desert tortoise data, and other relevant data. This report will be submitted within 15 days of completion of the clearance surveys to resource agency representatives.	Pre-construction
DT-7	The Applicant will appoint ABs and BMs to oversee compliance with the avoidance and minimization measures for desert tortoise. The AB or BM will be present during construction activities, and will have the right to halt all activities that are in violation of the desert tortoise protection measures. Work will proceed only after hazards to the desert tortoise are removed and the species is no longer at risk, or the AB has moved the individual from harm's way in accordance with the Desert Tortoise Relocation Plan (Appendix A). The AB and BM will have a copy of all the compliance measures while any work is being conducted on-site.	Pre-construction, construction, O&M, decommissioning
DT-8	Intentional killing or collection of special-status plant or wildlife species, including desert tortoise, in the Project site and surrounding areas will be prohibited. The ABs and BMs (during construction) will be notified immediately of any such occurrence. An AB will be responsible for notifying resource agency representatives of any such occurrence within 24 hours.	Pre-construction, construction, O&M, decommissioning
DT-9	For emergency response situations, the AB will notify resource agency representatives within 24 hours by telephone, fax, or electronic mail communication.	Pre-construction, construction, O&M, decommissioning
DT-11	Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches stored less than 8 inches aboveground, outside a fenced area of desert tortoise habitat, and left unattended for any length of time during the desert tortoise active period (i.e., early March through early June and September through early November) will be inspected for desert tortoise before the material is moved, buried, or capped. As an alternative, all such structures may be capped or placed on pipe racks.	Pre-construction, construction, O&M, decommissioning

Table 2-2. Avoidance and Minimization Measures Applicable to the Solar Facility		
Measure Acronym	Measure Description	Timing
DT-12	<p>In the event a desert tortoise is injured or killed resource agency representatives will be notified immediately by phone. Notification will occur no later than 12 noon on the business day following the event if it occurs outside of normal business hours so that the resource agencies can determine if further actions are required to protect the species. Written follow-up notification via fax or electronic communication will be submitted to the resource agencies within 2 calendar days of the incident, and will include the following information, as relevant:</p> <p><u>Injured Desert Tortoise.</u> If a desert tortoise is injured as a result of Project-related activities during construction, O&M, or decommissioning, the AB will immediately take it to a wildlife rehabilitation and/or veterinarian clinic approved by the resource agencies. Any veterinarian bills for such injured animals will be paid for by the Applicant. Following phone notification, as required above, resource agency representatives will determine the final disposition of the injured animal, if it recovers. Written notification will include, at a minimum, the date, time, location, circumstances of the incident, and name of the facility where the animal was taken.</p> <p><u>Desert Tortoise Fatality.</u> If a desert tortoise is killed by Project-related activities during construction, O&M, or decommissioning, a written report with the same information as an injury report will be submitted. The desert tortoise will be salvaged according to guidelines described in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-Roaming Desert Tortoise (Berry 2001). The Applicant will pay to have the desert tortoise transported and necropsied. The report will include the date and time of the finding or incident.</p>	Pre-construction, construction, O&M, decommissioning
DT-13	No later than 2 days following the above-required notification of an injured or killed desert tortoise, the Applicant will deliver to resource agency representatives via fax or electronic communication the written report from the AB describing all reported incidents of an injured or killed desert tortoise, identifying who was notified and explaining when the incident occurred.	Pre-construction, construction, O&M, decommissioning
DT-14	On an annual basis, the AB will prepare a report for resource agency representatives, documenting the effectiveness and practicality of the avoidance, minimization, and mitigation measures that are in place, and making recommendations for modifying the measures to enhance desert tortoise protection, as needed. The report will also provide information on the overall biological-resources-related activities conducted, including the WEAP training, clearance/pre-activity surveys, monitoring activities, and any observed desert tortoises, including injuries and fatalities.	Pre-construction, construction, O&M, decommissioning
DT-15	The AB will prepare annual monitoring reports that address the management of the mitigation lands acquired to compensate for impacts to desert tortoise. The annual report will be submitted to the Applicant and resource agency representatives at the end of each calendar year, for the duration of the permit.	Pre-construction, construction, O&M, decommissioning
DT-16	The Applicant will implement measures to ensure construction, O&M, and decommissioning of the Project do not attract ravens to the permit area by creating food or water subsidies, perch sites, roost sites, or nest sites.	Pre-construction, construction, O&M, decommissioning

Table 2-2. Avoidance and Minimization Measures Applicable to the Solar Facility		
Measure Acronym	Measure Description	Timing
DT-17	An AB will be retained as on-call support during the O&M phase to assist with desert tortoise responses and project reporting as necessary. In the event that a desert tortoise is found within the solar facility during the O&M phase, all activities in its vicinity will stop until the desert tortoise leaves the immediate work area and is out of harm's way. If the desert tortoise is in immediate danger of harm or does not move out of the planned work area in a reasonable time to allow for necessary work (reasonable time will be determined by the AB based on the proposed activities and their urgency), the AB will capture and relocate the animal to a safe location according to the USFWS protocol (USFWS 2009) and the Desert Tortoise Relocation Plan. An onsite Field Contact Representative (FCR) will be trained by the AB to handle desert tortoise in-case of emergencies where a desert tortoise is in imminent danger. The FCR will handle the desert tortoise in accordance with the approved Desert Tortoise Relocation Plan.	O&M
DT-18	The AB will responsible for WEAP trainings, surveys, compliance monitoring, and reporting.	Pre-construction, construction, O&M, decommissioning
DT-19	The potential for vehicles to strike desert tortoises will be minimized by educating employees on the proper procedures for operating vehicles and equipment within the Project site. Personnel will use established roadways (paved or unpaved) in traveling to and from the Project area. Cross-country vehicle and equipment use outside of designated work areas will be prohibited. To minimize the likelihood for vehicle strikes of desert tortoise, speed limits shall not exceed 25 miles per hour for travel outside of the permanent tortoise exclusion fence. The AB will define specific speed limits for Project areas depending on site conditions such as the likelihood of desert tortoise occurrence, visibility conditions, and weather.	Pre-construction, construction, O&M, decommissioning
DT-20	A trash abatement program will be established for the Project to reduce the attractiveness to opportunistic predators of desert tortoise such as common ravens (<i>Corvus corax</i>), coyotes (<i>Canis latrans</i>), and free-roaming dogs. Trash and food items will be kept in closed containers, removed as needed, and disposed of at an appropriate off-site landfill. Dead and injured wildlife found within the permit boundary will also be removed to reduce attraction of opportunistic predators. Dead and injured wildlife found within the permit boundary will also be removed, as needed, to reduce attraction of opportunistic predators. Dead and injured wildlife will be handled and removed in accordance with any applicable Project permits and plans.	Pre-construction, construction, O&M, decommissioning
DT-21	Workers will be prohibited from bringing pets and firearms to the Project site.	Pre-construction, construction, O&M, decommissioning

Table 2-2. Avoidance and Minimization Measures Applicable to the Solar Facility		
Measure Acronym	Measure Description	Timing
DT-22	Any time a vehicle or construction equipment is parked in desert tortoise habitat outside of the permanent tortoise exclusion fence, the ground under the vehicle will be inspected for the presence of desert tortoise before the vehicle/equipment is moved. If a desert tortoise is present, the vehicle/equipment will not be moved until the desert tortoise moves on its own away from the vehicle/equipment. If it does not move within 15 minutes during construction, the AB will capture and relocate the animal to a safe location according to USFWS protocol. During O&M, a trained and approved FCR may move a desert tortoise out of harm's way that does not move on its own in accordance with the approved Desert Tortoise Relocation Plan (Appendix A).	Pre-construction, construction, O&M (only as specified), decommissioning
DT-23	All vehicles and equipment will be in proper working condition to ensure that no potential exists for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be immediately (i.e., same day) informed of any hazardous spills. Hazardous spills will be immediately cleaned up and the surface recontoured so it does not pose a hazard to desert tortoise. The contaminated soil will be properly disposed of at a licensed facility.	Pre-construction, construction, O&M, decommissioning
DT-24	Water or dust palliatives will be applied to the construction ROW, dirt roads, trenches, spoil piles, and other areas where ground disturbance takes place to minimize dust emissions and topsoil erosion. Dust palliatives will be nontoxic to wildlife and plants. For construction during the desert tortoise active season, an AB or BM will patrol areas of disturbance to ensure that water does not puddle for long periods and attract desert tortoise, common ravens, or other wildlife to the Project site. Operational ponding will be avoided through careful grading and hydrologic design.	Pre-construction, construction, O&M (only as specified), decommissioning

Biological Objectives to Satisfy Biological Goal 2:

The Applicant has identified the following biological objective to satisfy Biological Goal 2 for desert tortoise:

- *Objective 3:* Contribute to conservation of the desert tortoise through off-site land acquisition in the Western Mojave Recovery Unit.

The Applicant's contribution to recovery of the desert tortoise would be commensurate with the unavoidable effects associated with covered activities described in the HCP. Thus, the Applicant will acquire approximately 500 acres of suitable desert tortoise habitat. Acquisition of off-site habitat will represent a 1:1 mitigation ratio for long-term effects to suitable desert tortoise habitat, and will include compensation for long-term habitat effects resulting from construction of the solar facility. Actual acreage acquired may be more or less than 500 acres due to parcel boundaries of acquired land; final mitigation acreage will be approved by USFWS. The following general qualitative criteria will be applied when selecting off-site mitigation lands for desert tortoise:

- Mitigation lands should expand upon larger blocks of lands that are either already protected or planned for protection, or feasibly could be protected by a public resource agency (e.g., BLM) or a private biological reserve organization (e.g., the Desert Tortoise Preserve Committee). Mitigation lands should not be completely isolated from other protected areas by significant barriers to desert tortoise movement (e.g., highways).
- Mitigation lands should have inherently moderate to good desert tortoise habitat that is likely to regenerate naturally when current disturbances (if there are any) are removed. Parcels should not be subject to such intensive recreational or other uses that recovery is rendered unlikely or lengthy. Invasive species that are likely to hinder habitat recovery (e.g., Saharan mustard) should not be present in uncontrollable numbers, either on or immediately adjacent to the parcels under consideration.
- Mitigation lands should support habitat that is either currently occupied or will likely be occupied by desert tortoise once the lands are protected from anthropogenic impacts and/or otherwise enhanced.

To achieve off-site mitigation obligations, the Applicant has preliminarily identified private lands in the Western Mojave Desert Recovery Unit that are located within the larger boundary of a Desert Wildlife Management Area and the Superior-Cronese Critical Habitat Unit. The precise location of the land is currently confidential, but land negotiations, biological desktop review, and field reconnaissance indicate that the potential mitigation land supports active desert tortoise populations and exhibits high-quality desert tortoise habitat characteristics. An alternative mitigation site is also being investigated in proximity to the project area.

The Applicant will provide for the long-term land management of off-site mitigation lands by providing initial funding for a non-wasting endowment to be used for that purpose. In addition, the Applicant may contribute funds to regional desert tortoise monitoring conducted by USFWS to assist with range-wide population monitoring in lieu of a detailed population monitoring effort on the off-site mitigation lands (see Section 6.1.3.2 of the HCP). The details of the funding will be presented in a mitigation proposal to USFWS.

The Applicant intends to meet its compensatory mitigation obligations prior to the initiation of project construction by, at minimum, upfront payment of a security or letter of credit for the estimated costs of mitigation (e.g., land acquisition and endowment costs), followed by completion of compensatory mitigation within 18 months following issuance of the permits and approvals. The Applicant will submit a Compensation Land Acquisition Report to USFWS for approval that describes the habitat characteristics of the parcel(s) and how the land to be acquired meets the requirements for desert tortoise. This report will also include any plans (e.g., a long-term management plan) and funding assurances.

HCP Monitoring, Adaptive Management, and Reporting

Per USFWS policy for HCPs, the monitoring program of an HCP should provide information to (1) evaluate compliance, (2) determine if biological goals are being met, and (3) provide feedback information for an adaptive management strategy. Accordingly, the HCP provides three monitoring types to address the objectives of the HCP monitoring effort:

- *Compliance monitoring* – Track HCP implementation to verify that the Applicant is carrying out the terms of the HCP and ITP.
- *Effects monitoring* – Evaluate the actual effects of covered activities on desert tortoise to verify that effects do not exceed estimates provided in the HCP.
- *Effectiveness monitoring* – Evaluate whether the operating conservation program of the HCP is consistent with the assumptions and predictions made when the HCP was developed and approved (65 Federal Register 35241–35257), if the biological goals are being met, and if the conservation strategy is being properly implemented.

Each monitoring type is designed to gather information to address specific questions related to tracking implementation of the HCP, including progress toward biological goals. The Applicant would be responsible for ensuring that monitoring data are collected, compiled, and reported annually to USFWS. To streamline reporting requirements for the monitoring plan, a single annual report summarizing the three monitoring efforts would be prepared and submitted to USFWS.

HCP Implementation and Funding

Section 10 permit regulations (50 CFR 17.32[b][1]–17.32[b][8]; 50 CFR 17.22[b][1]–17.22[b][8]) require that an HCP specify the procedures to be used for dealing with changed and unforeseen circumstances that might arise during implementation of the HCP. The Habitat Conservation Plan Assurances Rule (“No Surprises Rule”) (63 Federal Register 8859–8873; 69 Federal Register 71723–71731; 50 CFR 17.3) defines changed circumstances and describes the obligations of permittees and USFWS to address such changed circumstances. Unforeseen circumstances are defined by the No Surprises Rule as changes in circumstances that affect a species or geographic area covered by an HCP that could not reasonably have been anticipated by plan developers or USFWS at the time of the HCP’s negotiation and development, and that would result in a substantial and adverse change in the status of covered species (50 CFR 17.3).

The HCP discusses changed and unforeseen circumstances, and provides possible remediation actions that could be implemented if any of these changes were to occur. As necessary, the Applicant would implement measures specified in the HCP to respond to the changed circumstances. Additional conservation and mitigation measures (i.e., measures not identified in the HCP) to respond to changed circumstances would only be implemented with consent of the

Applicant, assuming that the HCP is being “properly implemented” (properly implemented means that the commitments and the provisions of the HCP have been or are fully implemented). A monitoring program would be designed to detect changes in circumstances that could occur during the permit term.

The HCP also describes the process for amending the HCP and for renewing the ITP and transferring the permit’s coverage to a new permittee prior to the expiration of the permit’s term. The HCP also discusses the funding mechanisms for the HCP and the timing of project activities in relation to acquisition of mitigation lands.

2.2.7 Gen-Tie Line on Combination of Federal and Private Lands

Under Alternative 2, the gen-tie line used to convey electric power from the solar facility to the Barren Ridge Switching Station would be constructed on a combination of BLM-managed lands and private lands. The Federal lands would not be part of USFWS’s Section 10(a)(1)(B) ITP action. Instead, Section 7(a)(2) ESA consultation with USFWS would be initiated by the BLM, and coverage for the take of desert tortoise would be part of BLM’s own NEPA process and approval action for the ROW grant. This component of the project is evaluated in this EA so that each of the potential USFWS actions and associated activities can be fully considered and evaluated as part of USFWS’s own NEPA process.

The Alternative 2 gen-tie line alignment (the Applicant’s preferred alignment) would route the gen-tie line primarily over public lands from the solar facility to the Barren Ridge Switching Station, paralleling existing and planned LADWP transmission lines and sharing a primary service road with those existing facilities. Short spur roads would be constructed between the existing LADWP access road and the new Alternative 2 transmission structures.

Figure 1-4 shows the alignment for the Alternative 2 gen-tie line route. Table 2-3 summarizes the public and private lands that would be crossed by the Alternative 2 gen-tie line alignment.

Table 2-3. Gen-Tie Line Land Ownership, Alternative 2 (Applicant’s Preferred Alignment)			
Alternative	Federal Lands (miles)	Private/LADWP Lands (miles)	Total (miles)
Alternative 2 (Preferred Alignment)	1.5	0.5	2.0

LADWP = Los Angeles Department of Water and Power

The ROW for the alignment would be generally 150 feet in width plus radial areas for conductor pull sites at each turn in the alignment and a separate ROW area for new spur roads leading from the existing LADWP service road. The ROW would accommodate the 230-kV gen-tie line, new spur roads, and all other areas of temporary disturbance. The alignment would exit the private land solar facility at the northwest corner of the site onto BLM land. Once on BLM land, the alignment would travel north-northeasterly to parallel the existing and planned LADWP high-

voltage transmission lines for approximately 1.2 miles before crossing the broad alluvial channel of the ephemeral Pine Tree Canyon Wash. The alluvial channel of the wash is approximately 0.25 mile in width. There is no principal channel. Flows are infrequent, and the active channels appear to shift regularly. Across the wash, the alignment would enter private lands for 0.1 mile before re-entering BLM lands for another 0.3 mile.

After crossing Pine Tree Canyon Wash, the alignment would continue to parallel the LADWP transmission lines, pass over the southeast corner of a private lands parcel for approximately 300 feet, and then reenter BLM lands for approximately 1,500 feet before turning east to again enter private lands, followed by a final northern turn to continue to the existing LADWP Barren Ridge Switching Station. From the eastern turn to the existing switching station, the alignment would travel through non-Federal lands only. Two private parcels and one parcel owned by LADWP would be used for the northern portion of the Alternative 2 gen-tie line alignment, which would travel approximately 0.4 mile in a northerly direction across Pine Tree Canyon Road (which is a private extension of BLM Route MK55) before entering the Barren Ridge Switching Station.

For the length of the alignment that is collocated with the LADWP ROW, the LADWP access road would be shared, and short spur roads would be constructed between the existing access road and the Alternative 2 transmission structures. See Appendix B for detailed design drawings that show the location of the existing LADWP access road and the new spur roads that would be constructed as part of Alternative 2.

It is anticipated that up to 7 acre-feet of water would be required for the 6-month duration of construction of Alternative 2.

Three design options for the structural components of the gen-tie line are under consideration for the Alternative 2 alignment. These are described below.

Option A (H-frame Option): If geotechnical conditions allow, the project Applicant would prefer to construct the gen-tie line primarily with wooden structures. Under Option A, the gen-tie line would be developed with a combination of approximately 11 wooden H-frame structures along straight segments of the alignment, approximately five wooden triple-pole structures at bends and termini in the alignment, and two triple-pole steel structures at the Pine Tree Canyon Wash crossing. The steel structures at Pine Tree Canyon Wash would be needed to facilitate the approximately 1,700-foot span required at that location. The triple-pole structures would be supported by insulated guy wires that would comply with guidelines prescribed by the Avian Power Line Interaction Committee (APLIC 2012). The height of the wooden H-frame and wooden triple-pole structures would be 70 to 80 feet above grade, and the two triple-pole steel structures would be 135 feet above grade. Under Option A, up to 13 new spur roads (up to 320 feet in length each) would be constructed from the existing service road that runs alongside the existing LADWP transmission lines.

Option B (Lattice Tower Option): Under Option B, the gen-tie line would be developed entirely with lattice steel structures (approximately 12), which would be placed adjacent to the planned LADWP BR RTP's lattice steel structures at equivalent span distances. The height of each tower would be 100 feet or 135 feet above grade, depending on location. The Applicant is in close coordination with LADWP in planning for concurrent and/or overlapping construction schedules for transmission lines. Under Option B, up to six spur roads (200 feet in length each) would be constructed as extensions of LADWP's planned spur roads to each of its towers. Since portions of these roadways would be constructed as part of the LADWP project, a net savings in disturbance would be realized than would be the case if the spur roads were to serve only the Applicant's project; rather than 320 feet of new roadway for each tower location, only 200 feet of additional roadway would need to be constructed. However, because of the anticipated timing of construction of both projects, the Applicant may need to construct LADWP's planned spur roads on LADWP's behalf. For this reason, this analysis assumes that the entire length of each spur road (up to 320 feet) would be constructed as part of the RE Cinco Gen-tie Line project.

Option C (Double-Circuit Support Structures for Future Renewable Generators): Under Option C, the gen-tie line would be developed with double-circuit transmission support structures that could accommodate a potential future circuit from the south into the Barren Ridge Switching Station. This intent of this option would be to optimize the use of space within the utility corridor and to minimize the potential environmental impacts that would be realized if an all new transmission line were to be proposed and constructed in the future. This option would only be used with the lattice steel structures proposed for Option B. The number of towers and spur roads, as well as the total disturbance area, would be identical to Option B. The only difference between Option C and Option B is that the transmission structures would be taller for Option C. To accommodate an additional circuit, the transmission structures would need to be approximately 35 feet taller than those described for Option B, providing for a total height above grade of 135 feet to 170 feet. There are currently no confirmed plans by other energy providers that would use such a double-circuit arrangement. A cost-sharing agreement between the Applicant and another provider is not currently in place, and no agreements are pending. Table 2-4 details the temporary and permanent disturbances associated with Alternative 2 with either Option A, Option B, or Option C.

Table 2-4. Gen-Tie Disturbance Areas, Alternative 2 (Applicant’s Preferred Alignment)				
Alternative 2 with Option A				
Project Component	Permanent Disturbance ¹ (acres)		Additional Temporary Disturbance ² (acres)	
	Federal Lands	Private/LADWP Lands	Federal Lands	Private/LADWP Lands
Service or Spur Roads ³	1.5	0.6	0.0	0.0
Support Structures	<0.1	<0.1	14.2	15.9
Pull Sites	0.0	0.0	18.8	14.1
SUBTOTAL	1.5	0.6	33.0	30.1
TOTAL	2.1		63.1	
Alternative 2 with Option B				
Project Component	Permanent Disturbance ¹ (acres)		Additional Temporary Disturbance ² (acres)	
	Federal Lands	Private/LADWP Lands	Federal Lands	Private/LADWP Lands
Service or Spur Roads ³	1.0	0.6	0.0	0.0
Support Structures	0.3	0.2	14.2	16.3
Pull Sites	0.0	0.0	18.8	14.1
SUBTOTAL	1.3	0.8	33.0	30.4
TOTAL	2.1		63.4	
Alternative 2 with Option C ⁴				
Project Component	Permanent Disturbance ¹ (acres)		Additional Temporary Disturbance ² (acres)	
	Federal Lands	Private/LADWP Lands	Federal Lands	Private/LADWP Lands
Service or Spur Roads ³	1.0	0.6	0.0	0.0
Support Structures	0.3	0.2	14.2	16.3
Pull Sites	0.0	0.0	18.8	14.1
SUBTOTAL	1.3	0.8	33.0	30.4
TOTAL	2.1		63.4	
1. Permanent disturbance is defined as those areas that would be permanently impacted over the life of the project, which includes structure and service road footprints.				
2. Temporary disturbance is defined as those areas that would be disturbed during construction, but that would be returned to natural conditions following construction. These include work areas around structures and conductor pull sites.				
3. Although new roads would be 12 feet wide, the maximum construction-related disturbance would include a 20-foot width. The entire 20-foot width is considered to be permanent disturbance because roadway maintenance is anticipated throughout the operational phase of the project. The length of each spur road is assumed to be up to 320 feet; each would start at the existing LADWP access road and end at the new proposed tower locations.				
4. The disturbance areas for Option C would be identical to those for Option B. The only appreciable difference between the two options is that the Option C structures would be approximately 35 feet taller than those proposed for Option B.				
LADWP = Los Angeles Department of Water and Power				

Transmission Support Structures and Conductors

Depending on the option selected, transmission support structures would consist of wooden H-frame and wood or steel triple-pole structures measuring 70 to 135 feet above grade, or steel lattice towers measuring 100 to 170 feet above grade.

If wooden H-frame and triple-pole structures are used, they would be embedded to a depth of 15 to 30 feet beneath the ground surface. Structures would be spaced approximately 700 to 1,100 feet apart, but this spacing could vary slightly based on terrain factors.

If lattice towers are used, they would be mounted on four separate concrete foundations, one for each of the tower's four legs. The span distance between the two lattice towers on either side of Pine Tree Canyon Wash would be approximately 1,700 feet. The distance between the remaining lattice structures, if used, would be approximately 1,100 feet, and they would have similar foundations. If used, lattice towers would be of similar appearance to the existing LADWP towers west of the project alternatives.

Minimum conductor clearance with respect to wind, voltage, structural span, and height would follow California Public Utilities Commission (CPUC) guidelines. Depending on the result of consultation with the Federal Aviation Administration and USFWS, aviation safety marker balls and/or bird flight diverters may be installed on mid-span conductor segments.

The gen-tie line would also incorporate an optical ground wire for protection and control communications between the solar facility site and the Barren Ridge Switching Station, and also a distribution circuit coming from the Barren Ridge Switching Station to the solar facility. The optical ground wire and distribution circuit would be supported by the same structures as the main power conductors.

Required upgrades to equipment at the Barren Ridge Switching Station would occur within the existing and/or previously approved expansion of the switching station fence line on LADWP lands.

Gen-Tie Line Service Road

A dirt service road would be constructed that would provide access to the gen-tie line for construction and maintenance activities. The location and layout of the service road would differ depending on the option selected.

Gen-Tie Line Construction

Construction of the gen-tie line would generally be carried out in the sequence listed below.

Pre-Construction Activities

Prior to physical construction activities along the gen-tie line alignment, a number of activities would be undertaken to prepare the site and crews for construction. These pre-construction activities are listed below.

Pre-Construction Surveys

Qualified biologists would conduct pre-construction surveys for desert tortoise, Mohave ground squirrel (*Xerospermophilus mohavensis*), burrowing owl (*Athene cunicularia*), other raptors and migratory birds, American badger (*Taxidea taxus*), and desert kit fox (*Vulpes macrotis arsipus*) in accordance with accepted protocols before construction starts. Sensitive resource areas would be flagged so they could be avoided or appropriately managed during construction.

Construction Crew Training

Any sensitive resources identified during the pre-construction surveys would be flagged or otherwise identified in the field to ensure awareness and appropriate avoidance during construction.

Prior to construction, all contractors, subcontractors, and project personnel would receive Worker Environmental Awareness Program (WEAP) training regarding the appropriate work practices necessary to effectively understand and implement the biological commitments in the project description. WEAP training would also train personnel on how to implement the mitigation measures, comply with applicable environmental laws and regulations, avoid and minimize impacts, and understand the importance of these resources and the purpose and necessity of protecting them. At a minimum, the following species and their habitat would be specifically covered in the WEAP training: desert tortoise, Mohave ground squirrel, burrowing owl, other raptors and migratory birds, American badger, and desert kit fox.

Gen-Tie Line Surveying

Pre-construction field survey work would include geotechnical testing and locating the alignment centerline, structure center hubs, and ROW boundaries. Each of these features would be subsequently staked in the field. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction limits.

A geotechnical investigation would be conducted to determine the nature of the subsurface soil conditions and determine final design criteria. This investigation would require access to each of the proposed transmission line structure sites by a small drill rig. The drill rig would sample the existing soils to a depth of approximately 50 feet. Access to the sampling locations would take place via existing roads and new roads that would be constructed as part of the project. Detailed information concerning new roads associated with each alternative alignment is provided in Sections 2.6.1, 2.6.2, and 2.6.3.

Establishment of Site Access and Construction Staging Area

Regardless of the alignment selected, access to the southern portion of the alignment would begin from the private land solar facility site, and access to the northern portion would begin from Pine Tree Canyon Road. A staging area would be established for storing materials, construction equipment, and vehicles, and also as a check-in yard for construction crews. The staging area would be located on the solar facility site on private land.

Physical Construction Activities

Construction of the gen-tie line would begin after construction of the service road and/or spur roads. The roadway would be constructed with bulldozers and graders, and then compacted to the extent required to ensure stability. Associated spoils would be pushed to the sides of the roadway. Earthen berms thus created would be rounded off so as not to inhibit travel by desert tortoise. The permanent road would be 12 feet in width, with a maximum temporary disturbance of 20 feet in width.

Installation of the gen-tie line would require temporary radial work areas around each structure location. The area used would be only that necessary to safely perform the construction, which could extend to a 60-foot radius from the structure's center point. Vegetation would not be cleared, but would instead be crushed to aid in restoration after construction is complete. Each wooden structure, if used, would be set within an augured hole or concrete foundation. Holes would be excavated using a truck-mounted drill rig. Poles would be delivered on a flat-bed trailer and hoisted into place by a crane. The annular space between poles and holes would be backfilled with concrete or soil. Resultant spoils would be spread around the work area. Lattice towers, if used, would be mounted on concrete piers. A truck-mounted drill rig would excavate holes for the piers. The lattice towers would be delivered via truck and assembled on-site.

Multiple pull sites would be required for installing conductors. The pull sites would measure approximately 100 feet by 450 feet, and would be located within and adjacent to the service road. Conductors would be strung between poles and towers with heavy-duty trucks, except for the span between the towers on either side of Pine Tree Canyon Wash, which would be strung with a helicopter or by dragging the conductor to avoid large-scale disturbance through the wash.

After the conductors have been pulled into place, the conductor sag between the structures would be adjusted to a pre-calculated level, and the line would then be set with a minimum ground clearance that meets CPUC requirements. The conductors would be attached to the end of each insulator, the sheaves removed, and the vibration dampers and other accessories installed. Ground crews would perform this work.

Construction of the gen-tie line is anticipated to require three to four crews, consisting of linemen, electricians, laborers, and operators, totaling 20 to 30 personnel. The installation would take place on weekdays and should not require overtime work or weekend work. Minimal

clearing and grading would be required for installing the gen-tie line, with permanent disturbance limited to the area immediately surrounding each structure and the 12-foot-wide unimproved service road along the alignment. If required, the duration of helicopter use would be several hours on a single construction day.

Equipment that would be used during construction of the gen-tie line and service road are summarized in Table 2-5.

Table 2-5. Gen-Tie Line Construction Equipment	
Equipment Type	Quantity
Backhoe	1
Bulldozer	1
Crane	1
Drill rig	1
Front-end loader	1
Forklift	2
Helicopter	1
Roller vibrator	1
Water truck	1
Concrete truck	1
Dump truck	4
Flatbed truck	1
Light and medium-duty truck	5

Water would be used for dust suppression during road and gen-tie line construction, with approved dust palliatives added as needed. No wells would be installed as part of the project, and no project area groundwater would be used for construction or operation of the gen-tie line. The Mojave Public Utilities District has indicated that it could provide water that could be trucked to the site. The northern service area boundary of the Mojave Public Utilities District is within 5 miles of the project area, and would be the most likely place to designate a metered connection. The volume of water required for construction of the gen-tie line would range from 5 to 7 acre-feet, depending on the alternative selected.

Post-Construction Cleanup

A Plan of Development would be approved by the BLM prior to the initiation of construction. As per the Plan of Development, construction sites would be kept in an orderly condition throughout the construction period by using approved enclosed refuse containers. Refuse and trash would be removed from the site and disposed of in accordance with BLM and other applicable regulations. No open burning of construction trash would occur.

Reclamation and Restoration of Temporary Disturbance Areas

As per the approved Plan of Development, reclamation activities would be conducted on temporarily disturbed construction areas, including structure locations and pull sites. The following reclamation and restoration activities would be implemented:

- To the maximum extent possible, all vegetation within work areas would be identified and flagged prior to initiation of construction for protection against trampling or removal. In all other areas, larger vegetation would be avoided through the overland travel routes that would be designated for construction equipment.
- Mulch or fertilizers would not be applied to avoid creating nutrient-rich sites that favor seed germination of alien and invasive plant species.
- Plant species in temporary disturbance areas that are protected under the California Desert Native Plants Act (California Food and Agricultural Code 80071 through 80075) would be salvaged and replanted at a site approved by the BLM.
- Following construction, disturbed areas would be restored to the original (pre-construction) topographic contours. Placement of gravel, rocks, and native vegetative material would make the site less visible to passersby and, thus, discourage spontaneous creation of unauthorized off-road trails.
- Hydrologic features, including wash banks, would not be disturbed.
- New seed collected locally would be broadcast or planted in a manner prescribed by the BLM.
- Native vegetation previously cleared from a construction area would be crushed and distributed over the surface within the reclaimed area to increase soil moisture and provide micro-catchments for wind-dispersed seeds.
- If a BLM biologist/botanist determines that vegetation is unsalvageable, it would be removed in a manner prescribed by the BLM, and revegetation would follow the prescription directed by the BLM.

The prevention of, introduction of, and spread of weeds and exotic species would be addressed throughout the construction process by complying with a weed management plan. All heavy equipment used during construction would be washed at an approved site prior to entering BLM land. This practice would ensure that weed seed from a different region is not transported into the project area.

Gen-Tie Line Operation

The gen-tie line would operate continuously throughout the life of the solar project, which is estimated to be 30 years. Once constructed, activities associated with the gen-tie line would be restricted to inspection and occasional maintenance and repair. Operational activities are described below.

Gen-Tie Line Inspection and Maintenance

Semi-annual visual inspections of the gen-tie line would be conducted via ground-based line patrols, including visual inspections of insulators, overhead grounds, and tower hardware. Line patrols would also perform trash removal services. Infrared scanning of insulators, overhead grounds, and hardware would be performed during initial start-up, at end of the first year, and subsequently every 3 years during the life of the project. Infrared scanning would be performed from the ground using a camera with telephoto capabilities. Alternately, the inspection could take place using aerial overflights.

Insulator washing is usually only necessary in areas with high air pollutant contamination. Based on the location of the project and assuming that insulators are not porcelain, washing to prevent the buildup of contaminants on insulators is not expected to be necessary.

Service Road Maintenance

The gen-tie line service road segments for which the Applicant would be responsible would be periodically graded to maintain adequate access. Grading would only occur after a large storm event that resulted in loss of integrity of the roadbed or inadequate access to the gen-tie line facilities.

Safety

An appropriately qualified and certified expert would conduct a baseline health and safety compliance and risk assessment to identify key risks and compliance obligations. The assessment would review and evaluate existing procedures, work practices, and other controls, and would result in recommendations for corrective actions, as needed, for compliance with local, State, and Federal regulations and guidelines. A site-specific program for hazard identification and planning for health and safety management would then be established and documented for the following:

- Hazardous energy control and electrical safety
- Hazards communication
- Personal protective equipment guidelines and protocols
- Emergency management (e.g., fire, earthquake, weather)

- Emergency response
- Protections from biological hazards (e.g., plants, animals, insects)

All relevant personnel would receive training on all aspects of the health and safety program.

Industrial Waste and Toxic Substances

Hazardous materials would not be used or stored along the gen-tie line. Kits for handling spills of hazardous materials would be carried in vehicles to respond to any small spills that might occur. A Spill Response Plan would be prepared for the project. The Spill Response Plan would describe all activities to be undertaken to prevent and respond to any hazardous spills. Hazardous materials would not be disposed of or released onto the ground, underlying groundwater, or any surface water.

A Material Disposal and Solid Waste Management Plan would be prepared for the project that would describe all solid waste disposal activities. All trash would have fully enclosed containment on-site. All construction waste, including trash, other solid waste, petroleum products, and other potentially hazardous materials, would be removed to a hazardous waste facility permitted or otherwise authorized by the California Department of Toxic Substances Control to treat, store, or dispose of such materials.

Vegetation Management and Invasive Weed Control Approach

Vegetation and invasive weeds along the gen-tie line alignment would be managed using the same approach as that described previously for the private lands solar facility site. All vegetation that may interfere with access to structures would be trimmed, removed, or sprayed with an approved herbicide as necessary and as described previously.

Operational Termination and Decommissioning Activities

The life of the approved solar facility would be approximately 30 years. At the end of its useful life, the project owner could choose to update the technology and re-commission the facility. If the decision were made to continue use of the solar facility, and, thus, the gen-tie line as well, a new ROW grant for the use of public lands would need to be obtained. A supplemental NEPA analysis would need to be conducted to assess the effects of continuing operation of the gen-tie line and issuance of a new ROW grant, in compliance with BLM requirements in effect at the time of issuance.

Should the decision be made to decommission the solar facility site, the gen-tie line would also be decommissioned. A BLM-approved Demolition and Reclamation Plan would be required to be in place prior to the end of the ROW grant term.

As part of the gen-tie line's decommissioning, all conductors and poles would be removed and hauled off-site for scrapping or to an approved landfill. A collection and recycling program

would be implemented to promote recycling of project components and to minimize disposal of project components in landfills.

For any new linear service road constructed on public lands, the BLM would determine, at its discretion or in accordance with current law or policy, whether it would like the service road to remain open to limited or general public use or whether it would like the road to be closed. Generally, roadways on BLM lands are allowed to remain in use, but occasionally management requirements and land use goals require that the roadway be blocked and actively restored or passively allowed to revert to natural conditions. In some cases, roadways are restored to pre-use conditions immediately upon closure. Sometimes, just the beginning portions of a roadway are restored to disguise the roadway's former use and to thus discourage future public use. Under this scenario, remaining segments not readily visible from a public roadway would be allowed to revert naturally to pre-use conditions.

Topographic landform features would be restored to pre-project construction contours or as approved by the BLM. Any soils disturbed in the process of decommissioning would be stabilized using a BLM-approved restoration plan.

For those portions of any approved service road on private lands, the private landowner would determine if it would like the service road to remain open to limited or general public use or if it would like the road to be closed. If the decision were made to close the road, a restoration plan similar to that described for public lands would be implemented.

2.3 Alternative 3 – Private Lands Solar Facility Development, Issuance of Incidental Take Permit for Solar Facility Site, and Gen-Tie on Combination of Federal and Private Lands (Alternative BLM Lands Alignment)

Under Alternative 3, the solar facility would be constructed and operated in an identical manner as that described above under Alternative 2. USFWS would issue an ITP based on the Applicant's HCP for the project. The BLM would issue a ROW grant for the construction and operation of a gen-tie line across Federal lands, but the route for the alignment would be different than that described previously for Alternative 2.

The Alternative 3 gen-tie line alignment would exit the solar facility site in the northeast corner of the site and travel north across BLM lands before rejoining the Alternative 2 alignment just south of Pine Tree Canyon Wash, as described above. This alternative alignment was evaluated in Kern County's 2011 EIR (Kern County Planning and Community Development Department 2011a).

Figure 1-4 shows the proposed alignment for the Alternative 3 gen-tie line route, and Table 2-6 summarizes the public and private lands that would be crossed.

Table 2-6. Gen-Tie Line Land Ownership, Alternative 3 (Alternative BLM Lands Alignment)			
Alternative	Public Lands (miles)	Private/LADWP Lands (miles)	Total (miles)
Alternative 3 (Alternative BLM Lands Alignment)	1.4	0.5	1.9

BLM = Bureau of Land Management

LADWP = Los Angeles Department of Water and Power

The ROW for the alignment would generally be 150 feet in width, and would accommodate the 230-kV gen-tie line and a linear service road, plus radial areas at each turn in the alignment. The alignment would enter BLM lands from the northeast corner of the solar facility site and travel briefly northeast and then due north for approximately 1.2 miles before joining the Alternative 2 alignment to the Barren Ridge Switching Station.

The Alternative 3 gen-tie line would be constructed and operated in a similar manner as the Alternative 2 alignment; however, this alignment would require construction of a new, linear service road along its entire length. The roadway would commence at the northeast corner of the solar facility site on private lands and would parallel the Alternative 3 gen-tie line alignment northward to the Barren Ridge Switching Station. However, the new roadway would not be constructed across Pine Tree Canyon Wash, but would instead terminate at either side of the wash with a vehicle turnaround, thus minimizing impacts to surface hydrology and vegetation across BLM-managed lands. The roadway would be accessed from its southern and northernmost ends via existing designated routes on BLM land that currently cross the proposed alignment, and also from Pine Tree Canyon Road.

If constructed, this alignment would use approximately 13 wooden H-frame structures along its entire length, with the exception of two lattice towers at the crossing of Pine Tree Canyon Wash.

It is anticipated that up to 7 acre-feet of water would be required for the 6-month duration of construction of Alternative 3.

Table 2-7 details the temporary and permanent disturbance associated with Alternative 3.

Table 2-7. Gen-Tie Line Disturbance Areas, Alternative 3 (Alternative BLM Lands Alignment)				
Project Component	Permanent Disturbance ¹ (acres)		Additional Temporary Disturbance ² (acres)	
	Federal Lands	Private/LADWP Lands	Federal Lands	Private/LADWP Lands
Service Roads ³	2.6	0.5	0.0	0.0
Support Structures	<0.1	<0.1	18.3	16.2
Pull Sites	0.0	0.0	24.5	14.1
SUBTOTAL	2.6	0.6	42.8	30.3
TOTAL	3.2		73.1	
BLM = Bureau of Land Management				
LADWP = Los Angeles Department of Water and Power				
1. Permanent disturbance is defined as those areas that would be permanently impacted over the life of the project, which includes structure and service road footprints.				
2. Temporary disturbance is defined as those areas that would be disturbed during construction, but that would be returned to natural conditions following construction. These include work areas around structures and conductor pull sites.				
3. Although new roads would be 12 feet wide, the maximum construction-related disturbance would be a 20-foot width. The entire 20-foot width is considered to be permanent disturbance because roadway maintenance is anticipated throughout the operational phase of the project.				

2.4 **Alternative 4 – Private Lands Solar Facility Development, Issuance of Incidental Take Permit for Solar Facility Site, and Gen-Tie on Private Lands Only**

Under Alternative 4, the solar facility would be constructed and operated in an identical manner as that described above under Alternative 2. USFWS would issue an ITP based on the Applicant's HCP for the project. In addition, the ITP would provide coverage for the construction and operation of a gen-tie line to be constructed solely on private lands. The HCP would be identical to that described above under Alternative 2 for the solar facility, but would also include avoidance and minimization measures specific to the private lands gen-tie line.

The project Applicant would prefer to route the gen-tie line over BLM lands using the alignment described for Alternative 2, since doing so would provide a shorter distance (1.9 miles for the Alternative 2 alignment vs. 3.6 miles for Alternative 4). The Applicant has submitted an application to the BLM to construct and operate a gen-tie line on Federal lands. The BLM is currently in the process of preparing an EA that considers this action. However, the Applicant is also considering a non-Federal lands alternative for the gen-tie line. The Applicant has informed the BLM that if the BLM were to deny the requested ROW grant for the gen-tie line on Federal lands, the gen-tie line would proceed to be built over private land, and that the Applicant has begun preliminary negotiations with some of the private owners to obtain rights to build the gen-tie line on their lands. Although these negotiations have not been concluded, and an all-private alignment would present substantial challenges to the project schedule and cost, the Applicant has informed the BLM that it would not abandon the approved solar project should a BLM ROW

not be approved. Accordingly, this alternative evaluates the inclusion of a private lands gen-tie line that would be covered under a Section 10(a)(10)(b) ITP issued by USFWS.

Under this alternative, the gen-tie line would be located entirely on private and LADWP-owned land. Figure 1-4 shows the proposed alignment for the private lands gen-tie line route. The gen-tie line would be approximately 3.6 miles in length. The easement area for the alignment would be 150 feet in width plus radial areas at turns in the alignment, and would accommodate the 230-kV gen-tie line and a linear service road. The alignment would leave the solar facility site at the southeast corner and cross over SR-14, traveling in an easterly direction. After approximately 0.6 mile, the alignment would turn northward, cross over Phillips Road, and then travel for approximately 0.8 mile, whereupon the alignment would parallel SR-14 along its eastern side for approximately 1,200 feet. The alignment would then turn northwesterly, cross over SR-14, and travel approximately 800 feet before turning north and traveling approximately 1.2 miles. The alignment would cross over Pine Tree Canyon Wash within this segment. After crossing the wash, the alignment would turn east for approximately 850 feet, and then turn north for approximately 2,000 feet before tying into the switching station.

Transmission support structures for the Alternative 4 gen-tie line would consist of wooden H-frame and triple-pole structures measuring 80 to 100 feet above grade. H-frame structures would be used along the entire alignment, with the exception of the structures on either side of Pine Tree Canyon Wash, where steel lattice towers would be constructed measuring 100 to 135 feet above grade. These would be needed to facilitate the length of the span cross the wash to avoid disturbance within the wash.

Wooden H-frame and triple-pole structures would be embedded to a depth of 15 to 30 feet beneath the ground surface. Structures would be spaced approximately 700 to 1,100 feet apart, but this spacing could vary slightly based on terrain factors. The two lattice towers on either side of Pine Tree Canyon Wash would be mounted on four separate concrete foundations, one for each of the tower's four legs. The span distance between the two towers would be approximately 1,700 feet. The lattice towers would be of similar appearance to the existing LADWP towers west of the alignment.

In all, a combination of approximately 27 H-frame structures, wooden triple-pole structures, and lattice steel towers would be required for construction of the private lands gen-tie line.

Minimum conductor clearance considering wind, voltage, structural span, and height would follow CPUC guidelines. Aviation safety marker balls and/or bird flight diverters could be installed on mid-span conductor segments if required.

The gen-tie line would also incorporate an optical ground wire for protection and control communications between the solar facility site and the Barren Ridge Switching Station. The optical ground wire would be supported by the same structures as the main power conductors.

Required upgrades to equipment at the Barren Ridge Switching Station would occur within the existing and/or previously approved expansion of the switching station fence line on public utility lands.

A service road would parallel the gen-tie line northward to the Barren Ridge Switching Station. The roadway would be approximately 12 feet in width. The service road would not be constructed across Pine Tree Canyon Wash, but would instead terminate at either side of the wash with a vehicle turnaround.

A total of 19 private parcels and one parcel owned by LADWP would be crossed by the Alternative 4 gen-tie line alignment. The indirect route for this alignment and the two crossings of SR-14 would be required to avoid Federal land parcels that lie adjacent to the proposed solar facility site. It is assumed that easements would be entered into with the various private landowners for the gen-tie line and service road. The crossing of SR-14 would necessitate the procurement of encroachment permits and easements from Caltrans.

Table 2-8 details the temporary and permanent disturbance associated with the Alternative 4 private lands gen-tie line.

Table 2-8. Gen-Tie Line Disturbance Areas, Alternative 4				
Project Component	Permanent Disturbance ¹ (acres)		Additional Temporary Disturbance ² (acres)	
	Federal Land	Private/LADWP Land	Federal Land	Private/LADWP Land
Service Roads ³	0	7.1	n/a	n/a
Support Structures	0	0.1	0	60.9
Pull Sites	n/a	n/a	0	65.1
SUBTOTAL	0	7.2	0	126.0
TOTAL	7.2		126.0	
LADWP = Los Angeles Department of Water and Power				
1. Permanent disturbance is defined as those areas that would be permanently impacted over the life of the project, which includes structure and service road footprints.				
2. Temporary disturbance is defined as those areas that would be disturbed during construction, but that would be allowed to return to natural conditions following construction. These include work areas around structures and conductor pull sites.				
3. Although new roads would be 12 feet wide, the maximum construction-related disturbance would include a 20-foot width. The entire 20-foot width is considered to be permanent disturbance because roadway maintenance is anticipated throughout the operational phase of the project.				

2.4.1 Gen-Tie Line Construction and Operation

Construction and operation of the gen-tie line would be carried out in an identical manner as that described previously for Alternative 2.

HCP Gen-Tie Line Specific Avoidance and Minimization Measures

The HCP for the solar facility described under Alternative 2 would be supplemented with measures specific to the private lands gen-tie line. These measures are summarized in Table 2-9.

Table 2-9. Gen-Tie Line Specific Avoidance and Minimization Measures		
Measure Acronym	Measure Description	Timing
<i>General Measures (GM)</i>		
GM-2	The anticipated impact zones within the gen-tie line right-of-way (ROW), including staging areas, equipment access, and disposal or temporary placement of soils, will be delineated with stakes and flagging by a Biological Monitor (BM) prior to construction. Construction-related activities outside of the impact zone will be prohibited.	Pre-construction, construction, decommissioning
<i>Desert Tortoise Measures (DT)</i>		
DT-5	Prior to the start of gen-tie line construction, Authorized Biologists (ABs), and BMs under the direction of an AB, will conduct a pre-construction survey for desert tortoise within the gen-tie line ROW in accordance with current U.S. Fish and Wildlife Service guidelines (USFWS 2009). The pre-construction survey of the gen-tie line ROW will occur no more than 48 hours before planned activity. The pre-construction survey may be conducted during any time of year and will consist of transect surveys at no greater than 5 meters (15 feet) within the gen-tie line ROW and a 50-foot buffer on either side of the ROW. All burrows that could provide shelter for a desert tortoise will be avoided if at all possible through final project design. Burrows that cannot be avoided will be excavated during the clearance survey.	Pre-construction, construction, operation and maintenance, decommissioning
DT-10	At the end of each construction workday, the AB or BM will ensure that all potential wildlife pitfalls resulting from construction activities (trenches, bores, and other excavations) are backfilled. If backfilling is not feasible, all trenches, bores, and other excavations will be sloped at a 3:1 ratio at the ends to provide wildlife escape ramps, covered completely to prevent wildlife access, or fully enclosed with desert tortoise exclusion fencing. All trenches, bores, and other excavations outside of the areas permanently fenced with desert tortoise exclusion fencing will be inspected periodically throughout the day, at the end of each workday, and at the beginning of each day by the AB or BM. Should a desert tortoise or other wildlife become trapped, the AB will remove and relocate the individual, as described in the Desert Tortoise Relocation Plan (Appendix A of the Habitat Conservation Plan).	Construction, decommissioning

2.5 Alternatives Considered But Not Analyzed in Detail

A number of alternatives were considered for the solar facility and gen-tie line project. Each was eliminated from detailed analysis based on constraints imposed by existing land use and ownership, policy restrictions, or implementation constraints. These are summarized below.

2.5.1 Substitution of Solar Power Generation with Wind Power Generation

The project area is occasionally subject to high winds. In addition, a number of wind power-generation facilities are located nearby, most notably the extensive windmill farms in the vicinity of Tehachapi. It could be assumed, then, that the proposed solar facility could be substituted with wind turbines to meet the project's renewable energy objectives. However, the winds that occasionally occur in the area are neither consistent nor reliable. Nearby wind facilities were carefully located in areas that possess the topographic and metrological conditions required to ensure the availability of consistent wind conditions. Tehachapi Pass, for examples, funnels wind that is entering and leaving the Mojave Desert, and thus nearly always provides conditions

favorable for wind power-generation. Similarly, wind power-generation facilities located in the higher elevations of nearby Barren Ridge and the southern Sierra Nevada also present favorable and consistent conditions. The project area does not present these same favorable conditions. For this reason, the substitution of solar power generation with wind power generation was dropped from further consideration.

2.5.2 Substitution of Solar Photovoltaic Generation with Concentrating Solar Generation

Concentrating solar generation has been successfully deployed in other desert areas, such as the 3,500-acre Ivanpah facility along Interstate 15 near the California/Nevada state line. These facilities, however, are generally much larger than the approximately 500 acres proposed for photovoltaic solar and a gen-tie line. This is largely a function of the quantity of reflectors needed to concentrate the solar energy to a point where it can be successfully generated. In addition, concentrating solar requires specific topographic and metrological conditions to be successfully deployed. The proposed project's relatively small size (approximately 500 acres) and the site's specific characteristics make the site unsuitable for concentrating solar generation.

2.5.3 Reduced Project Footprint

The proposed project was originally envisioned to cover more than 600 acres that would have occupied lands on both sides of SR-14. However, as design investigations were carried out, it became apparent that a number of constraints were present that would make development of the entire 640-acre section impractical. Among these constraints was the difficulty of getting generated power across SR-14, as well as topographic constraints presented by on-site drainages and setback requirements from SR-14 and the existing and planned LADWP transmission lines. As a result, the proposed project was scaled back to its current configuration. This represents the smallest footprint within which a facility of this type at this location could be constructed while still meeting the Applicant's technical and financial feasibility requirements. Therefore, an even smaller project footprint was dropped from further consideration.

3. AFFECTED ENVIRONMENT

3.1 Introduction and Overview

The affected environment for each of the alternatives assessed in this document is generally the same for all of the resource areas described below. Alternatives 2 and 3 comprise the solar facility site and a combination Federal lands/private lands gen-tie line, and Alternative 4 comprises the solar facility site, plus the private lands gen-tie line alignment. Collectively, these areas are relatively close to one another, present similar physical characteristics, and pass through the same habitats and terrain. Therefore, unless otherwise stated, the affected environment descriptions presented below are applicable to all of the alternatives. For ease of reading, the term “project area” is used to describe the area within which the solar facility and the alternative gen-tie lines would be constructed. Where areas for the solar facility and the alternative gen-tie line alignments differ substantially, or where some characteristic requires that they be described separately, that distinction is made in the discussion.

3.1.1 Issues Not Discussed with Rationale

A number of topical issue areas are not evaluated in this EA, generally because the identified resources are not present within or around the project area, or because implementation of the alternatives would have no effect with respect to the topic being evaluated. These issue areas are listed below, with an explanation of why they are not being evaluated further in this EA.

Agricultural Lands

The project area is classified as “non-agricultural” by the California Farmland Mapping and Monitoring Program (California Department of Conservation 2010), which is a classification used for lands that present constraints for agricultural use. The project area is currently not under cultivation, nor is there evidence that the project area has been used previously for cultivation or other agricultural purposes beyond infrequent ephemeral grazing. The area is arid, and water for irrigation is not readily available. Based on these factors, none of the alternatives would have an effect on agricultural lands. Accordingly, this resource will not be analyzed further.

Mineral Resources

During preparation of the EIR for the solar project, Kern County determined that the project area is not part of a designated mineral recovery area or within an area that has been determined to contain appreciable quantities of minerals (Kern County Planning and Community Development Department 2011b). The closest mine to the project area is the P.V. Clay Mine, which is located approximately 5.5 miles to the northwest. There would be no loss of access to known or unknown mineral resource deposits as a result of implementation of the any of the alternatives. Accordingly, this topic will not be analyzed further.

National Scenic and Historic Trails

There are no National Scenic or Historic Trails in the vicinity of the project area. The closest National Scenic Trail is the Pacific Crest Trail, the nearest segment of which is located more than 10 miles to the west of the project area, and the resource is separated from the project area by rugged, mountainous terrain. Based on the absence of these resources from the project vicinity, these resources will not be analyzed further.

Wilderness, Wilderness Characteristics, and Wild and Scenic Rivers

The project area is not located adjacent to a designated Wilderness Area, Wilderness Study Area, or Wild and Scenic River Area, nor does the area contain lands with Wilderness characteristics. The nearest designated Wilderness Area is the El Paso Mountains Wilderness, located approximately 20 miles northeast of the project area. The nearest Wild and Scenic River is the Kern River, located more than 40 miles from the project area. Based on the distance of the project area from these resources, none of the alternatives would have an effect on Wilderness or Wild and Scenic Rivers. Accordingly, this topic will not be analyzed further.

Wild Horses and Burros

There are no known populations of wild horses or burros in the project area, and there are no Herd Management Areas in the vicinity. The closest Herd Management Area is the Centennial Herd Management Area, which is located north of the city of Ridgecrest, approximately 70 miles north of the project area. Based on the absence of this resource from the project vicinity, this resource will not be analyzed further.

3.2 Air Resources

The project area is located within the Mojave Desert Air Basin. The Eastern Kern Air Pollution Control District (EKAPCD) is the government agency that regulates sources of air pollution within the project area. As required by the Federal Clean Air Act, air basins or portions thereof have been classified as either “attainment” or “nonattainment” for each criteria air pollutant based on whether or not the standards have been achieved. Table 3.2-1 shows the current EKAPCD attainment status for the listed criteria pollutants. Currently, like most rural areas, the portion of the Mojave Desert Air Basin in which the project area is located is in “non-attainment” for the Federal 8-hour ozone standard. The Mojave Desert Air Basin is currently in attainment and/or unclassified status for all other Federal ambient air quality standards.

Table 3.2-1. Eastern Kern County Air Pollution Control District Attainment Status		
Pollutant	National Ambient Air Quality Standards	California Ambient Air Quality Standards
Ozone – 1 Hour	Attainment	Moderate Nonattainment
Ozone – 8 Hour	Nonattainment	Nonattainment
PM ₁₀	Unclassifiable/Attainment	Nonattainment
PM _{2.5}	Unclassifiable/Attainment	Unclassified
Carbon Monoxide	Unclassifiable/Attainment	Unclassified
Nitrogen Oxide	Unclassified	Attainment
Sulfur Dioxide	Unclassified	Attainment
Lead Particulates	Unclassifiable/Attainment	Attainment
PM ₁₀ = particulate matter up to 10 micrometers in diameter PM _{2.5} = particulate matter 2.5 micrometers or less in diameter Source: EKAPCD 2014		

Jurisdictions within nonattainment areas are required to prepare an air quality management plan that includes strategies for achieving attainment. The EKAPCD originally published its Ozone Air Quality Management Plan in 1991. In 1994, this plan was amended to reflect findings showing that there were no self-generated exceedances of ozone standards in the EKAPCD; rather, all exceedances occurred during transport days. Within a moderate ozone nonattainment area, the EKAPCD is required to adopt retrofit Reasonably Available Control Technology rules for all sources of ozone precursor emissions. The EKAPCD has fulfilled this mandate by adopting a number of rules between 1987 and 2005 that aim to reduce ozone precursor emissions.

To maintain attainment of the Federal standard for particulate matter up to 10 micrometers in diameter (PM₁₀), EKAPCD established Rule 402, which states that “no person shall cause or allow emissions of fugitive dust to remain visible beyond the property line of the emissions sources and requires that for any large operations, a person shall not cause or allow downwind PM₁₀ concentrations to increase more than 50 micrograms per cubic meter above upwind concentrations.” Rule 402 applies to bulk storage, earthmoving, construction and demolition, and human-caused conditions resulting in wind erosion.

3.3 Biological Resources – Vegetation

This section describes the botanical resources present or potentially present within the project area. The project area is located within the western Mojave Desert, adjacent to SR-14, north of SR-58, south of Jawbone Canyon Road, and east of the foothills of the southern Sierra Nevada mountain range. The gently sloping and undulating landscape of the project area ranges in elevation from approximately 2,420 to 2,670 feet and is relatively homogenous.

The following technical reports were consulted to summarize the existing biological conditions of the project area: Biological Resources Assessment for the RE Kern County Desert Solar Projects (Rincon Consultants 2011a); Supplemental Biological Results: RE Rosamond One and Two, RE Barren Ridge 1 (Rincon Consultants 2011b); Barren Ridge Photovoltaic Electrical Generation Facilities Jurisdictional Delineation Letter Report (AECOM 2011a); Golden Eagle (*Aquila chrysaetos*) Analysis for the Recurrent Energy Barren Ridge Solar 1 Project (AECOM 2014a); and Rare Plant Survey Report for the Barren Ridge Solar PV and Generation Tie-Line Project (AECOM 2014f). Biological surveys conducted for the proposed solar facility and adjacent gen-tie line alignments are summarized in Table 3.3-1.

The surveys summarized in Table 3.3-1 were conducted for the proposed solar facility site and the Alternative 2 and 3 gen-tie line alignments proposed on Federal land and west of SR-14. Biological resource field surveys were only performed within a portion of the Alternative 4 private land gen-tie line alignment, as this alignment was finalized following completion of biological surveys. However, given the homogeneity of the landscape, botanical resources present within the private land gen-tie line alignment are expected to be similar to those described below.

Table 3.3-1. Summary of Biological Resource Surveys Conducted Within the Project Area	
Survey Type	Survey Dates¹
Field Reconnaissance	March 18–19, 2010; October 19, 2010; March 23, 2011
Rare Plant Surveys	April 11–14, 2011; May 17–19, 2011; October 21–23, 2013; March 3–6, 2014
Desert Tortoise Protocol Surveys	September 29–October 3, 2010; April 23–25, 2011; May 1–5, 2011
Desert Tortoise Habitat Assessment – Gen-Tie Line	March 4 and 5, 2014
Burrowing Owl Surveys	September 29–October 3, 2010; April 23–25, 2011; May 1–5, 2011; May 10–11, 2011; May 30–31, 2011
Raptor Surveys	May 10–11 and May 30–31, 2011
Jurisdictional Evaluation ²	April 8 and 14, 2011
<p>1. Survey dates include surveys conducted for both the proposed gen-tie line alternative alignments and the adjacent private lands solar facility.</p> <p>2. Results documented during the jurisdictional evaluation applicable to biological resources are summarized in this section. Results of the jurisdictional evaluation are summarized in Section 3.18.3.</p>	

3.3.1 Vegetation Communities

Two upland vegetation communities were mapped within the project area: creosote bush-white bursage scrub and desert saltbush scrub. In addition, three types of aquatic features were mapped within the project area (AECOM 2011a): unvegetated swales, unvegetated ephemeral dry wash, and southern alluvial fan scrub associated with drainages. Aquatic-related habitats were

classified according to both the Preliminary Descriptions of the Terrestrial Natural Communities of California (Holland 1986) and Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979). Vegetation communities are shown in Figure 3.3-1 and described in the following subsections. Section 3.19 provides detail regarding potential jurisdictional waters present within the project area.

Creosote Bush–White Bursage Scrub

Creosote bush–white bursage scrub occurs throughout the project area and is dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*). Associated shrubs and subshrubs are allscale saltbush (*Atriplex polycarpa*), Nevada ephedra (*Ephedra nevadensis*), scalebroom (*Lepidospartum squamatum*), Cooper’s goldenbush (*Ericameria cooperi*), rubber rabbitbrush (*Ericameria nauseosa*), California buckwheat (*Eriogonum fasciculatum*), cheesebush (*Hymenoclea salsola*), winterfat (*Krascheninnikovia lanata*), and Anderson’s desert thorn (*Lycium andersonii*). Cacti present include Wiggins’ cholla (*Cylindropuntia echinocarpa*). Common herbaceous plants include fiddleneck (*Amsinckia* sp.), filaree (*Erodium* sp.), chia (*Salvia columbariae*), and angled stem buckwheat (*Eriogonum angulosum*). Grass species present in this community consist of red brome (*Bromus rubens*), cheat grass (*B. tectorum*), ripgut (*B. diandrus*), and rattail fescue (*Vulpia myuros*). This floristic association corresponds to Mojave creosote bush scrub (Holland 1986).

Desert Saltbush Scrub

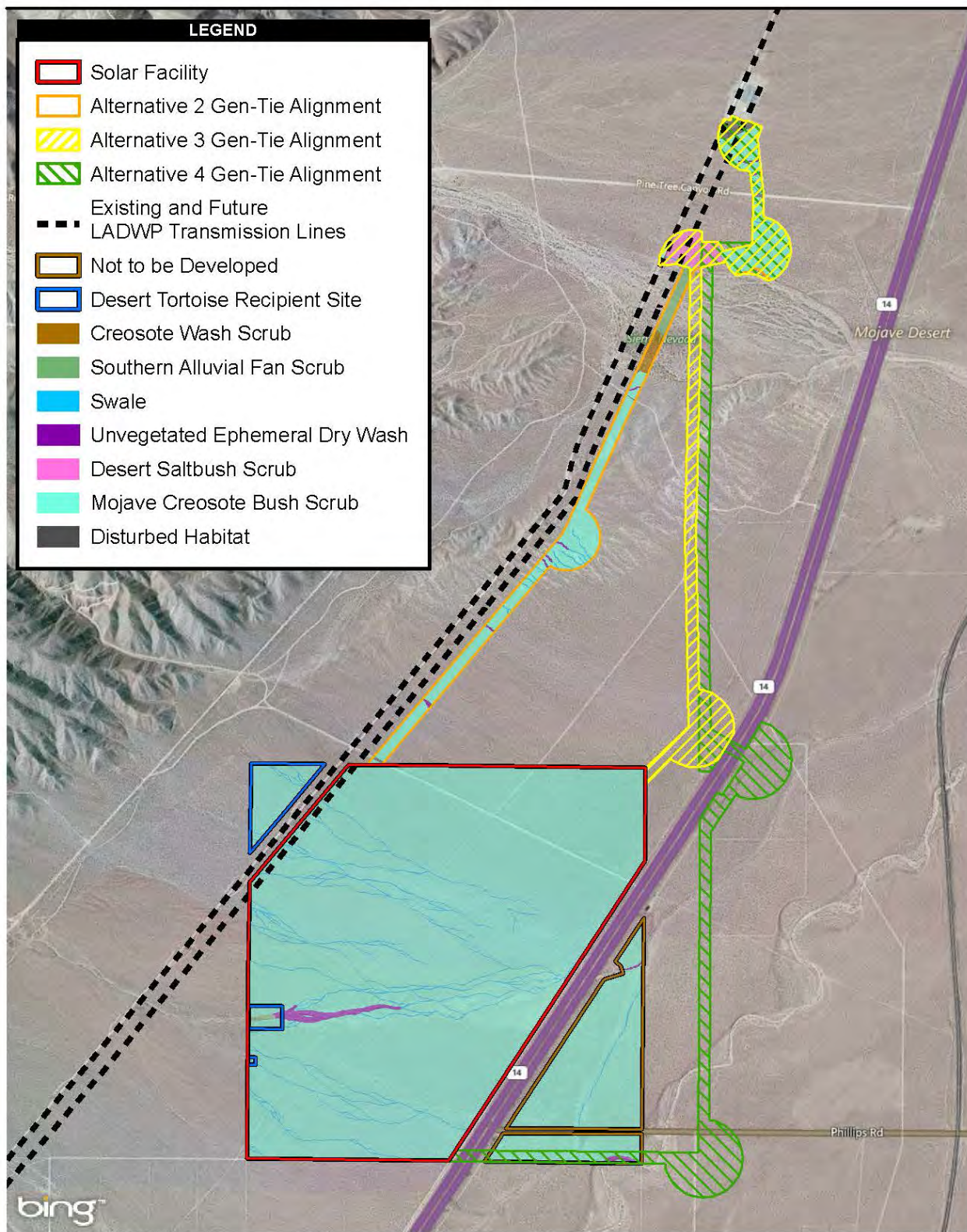
Desert saltbush scrub occurs in an upland area of the northern portion of the project area (along the all-private-land gen-tie line alignment), where allscale saltbush becomes co-dominant with adjoining Mojave creosote bush scrub. This plant association compares closely with the Holland community described as Sierra-Tehachapi saltbush scrub, but includes creosote bush and white bursage.

Unvegetated Ephemeral Dry Wash

The unvegetated ephemeral dry washes within the project area do not support wash-dependent vegetation and are generally linear (however, the southeast ephemeral dry wash does present some sinuosity). The unvegetated ephemeral dry wash within the project area abates into the landscape and forms into a swale complex at its eastern terminus.

Unvegetated Swales

The unvegetated swale features occurring within the project area are mostly associated with mixed saltbush scrub and Mojave creosote bush scrub. These swales present as multiple linear features forming a significant component of a larger drainage network. The swale features range from approximately 1 to 5 feet in width, and collectively compose limited bajada-type topography within the project area.



Source: AECOM 2013; RE Cinco 2013;
Image courtesy of USGS Image courtesy of the Nevada State Mapping Advisory Committee © 2014 Microsoft Corporation © 2014 Nokia © AND



2,000 1,000 0 2,000 Feet

Scale: 1:24,000; 1 inch = 2,000 feet

Figure 3.3-1
Vegetation Communities

Southern Alluvial Fan Scrub

Southern alluvial fan scrub is a wash-dependent, sensitive vegetation community. A small amount of southern alluvial fan scrub is present within the western portion of the project area, before transitioning into unvegetated ephemeral dry wash and unvegetated swale habitat. This community is dominated by allscale saltbush, scale-broom, desert allysum (*Lepidium fremontii*), and green rabbitbrush (*Ericameria teretifolia*), with associated species from the neighboring creosote scrub habitat.

3.3.2 Special-Status Plant Species

Special-status plant species analyzed herein include species that are listed, proposed for listing, or are candidates for listing as threatened or endangered by USFWS under the ESA; listed, proposed for listing, or candidates for listing as rare, threatened, or endangered by CDFW under the California Endangered Species Act (CESA); or categorized by the California Native Plant Society (CNPS) into one of the six California Rare Plant Ranks (i.e., Rank 1A, 1B, 2A, 2B, 3, or 4). The CNPS is a statewide resource conservation organization that has developed an inventory of California's sensitive plant species. CNPS's California Rare Plant Ranking System is sanctioned by CDFW and essentially serves as an early warning list of potential candidate species for threatened or endangered status.

Special-status plant species previously recorded from the region are listed in Table 3.3-2. Seventeen special-status plant species have moderate to high potential to occur within the project area based on site conditions. None of these special-status plant species were detected during focused rare plant surveys in spring 2011, fall 2013, or spring 2014, or during vegetation mapping surveys in 2010 and 2013 (AECOM 2014f; Rincon Consultants 2011a).

Table 3.3-2. Potentially Occurring Special-Status Plant Species in the Project Area			
Species	Status	Natural History	Potential Occurrence in the Project Area
Spanish needle onion (<i>Allium shevockii</i>)	CNPS Rank 1B.3	Perennial bulbiferous herb. Occurs in rocky areas in pinyon and juniper woodland and upper montane coniferous forest. Flowers May to June.	Low potential for occurrence due to lack of suitable woodland and forest habitat.
Alkali mariposa lily (<i>Calochortus striatus</i>)	CNPS Rank 1B.2	Herbaceous perennial geophyte with large pink, radially striped flowers. Occurs in alkali seeps and seasonally moist locations. Flowers April to June.	Low potential for occurrence due to lack of suitable alkali seep habitat.
Kern County evening primrose (<i>Camissonia kernensis</i> ssp. <i>kernensis</i>)	CNPS Rank 4.3	Annual herb on sandy, gravelly, granitic soils. Found in chaparral, Joshua tree woodland, and pinyon and juniper woodlands. Flowers March to May.	Low potential for occurrence due to lack of suitable woodland or chaparral habitat.
White pygmy-poppy (<i>Canbya candida</i>)	CNPS Rank 4.2	Annual herb on sandy and gravelly soils. Found in Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodlands. Flowers March to June.	High potential to occur in desert scrub habitat on-site.
Mojave paintbrush (<i>Castilleja plagiotoma</i>)	CNPS Rank 4.3	Perennial herb (hemiparasitic) found in great basin scrub (alluvial), Joshua tree woodland, lower montane coniferous forest, and pinyon and juniper woodland. Flowers April to June.	Moderate potential to occur in desert scrub in the alluvial washes on-site.
Death Valley sandmat (<i>Chamaesyce vallis-mortae</i>)	CNPS Rank 4.2	Perennial herb found in sandy or gravelly soils in Mojavean desert scrub. Flowers May to October.	High potential to occur on-site in desert scrub.
Mojave spineflower (<i>Chorizanthe spinosa</i>)	CNPS Rank 4.2	Small ephemeral annual on sandy and gravelly soils. Sometimes in alkaline areas, chenopod scrub, Joshua tree woodland, Mojavean desert scrub, playas. Flowers April to June.	Moderate potential to occur in desert scrub habitat on-site.
Kern Canyon clarkia (<i>Clarkia xantiana</i> ssp. <i>parviflora</i>)	CNPS Rank 4.2	Annual herb often found in sandy, sometimes rocky slopes or roadsides. Prefers chaparral, cismontane woodland, great basin scrub, and valley and foothill grassland. Flowers May to June.	Moderate potential to occur in sandy or rocky soils in desert scrub habitat on-site.
Streambank spring beauty (<i>Claytonia parviflora</i> ssp. <i>grandiflora</i>)	CNPS Rank 4.2	Annual herb found in rocky soils in cismontane woodland habitat. Flowers February to May.	Low potential to occur on-site due to lack of cismontane woodland habitat.
Desert springparsley (<i>Cymopterus deserticola</i>)	CNPS Rank 1B.2	Low-growing herbaceous perennial with silvery parsley like leaves and a ball-shaped inflorescence. Found in sandy soils in Joshua tree woodland and Mojavean desert scrub. Flowers March to May.	High potential to occur in the desert scrub on-site.
Red Rock tarplant (<i>Deinandra arida</i>)	State Rare; CNPS Rank 1B.2	Annual herb found in clay and volcanic tuff in Mojavean desert scrub. Flowers April to November.	Moderate potential to occur in the rocky desert scrub and wash habitats on-site.

Table 3.3-2. Potentially Occurring Special-Status Plant Species in the Project Area			
Mojave tarplant (<i>Deinandra mohavensis</i>)	State Endangered; CNPS Rank 1B.3	Annual in vernal moist and alkali areas in drainages. Flowers July to October.	Moderate to low potential to occur in the washes on-site. No vernal moist spring habitat is present on-site.
Recurved larkspur (<i>Delphinium recurvatum</i>)	CNPS Rank 1B.2	Slender herbaceous perennial to nearly 3 feet tall with delicate pale blue flowers growing in deeper fine soil with grasses and herbs. Flowers March to June.	Low potential to occur on-site due to lack of grasslands.
Limestone dudleya (<i>Dudleya abramsii</i> ssp. <i>calcicola</i>)	CNPS Rank 4.3	Perennial succulent herb found in carbonate soils in chaparral and pinyon and juniper woodland. Flowers April to June.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Tracy's eriastrum (<i>Eriastrum tracyi</i>)	State Rare; CNPS Rank 3.2	Annual herb found in chaparral and cismontane woodland. Flowers May to July.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Mojave woolly sunflower (<i>Eriophyllum mohavense</i>)	CNPS Rank 1B.2	Small ephemeral annual on sandy and gravelly soil in Mojavean desert scrub, chenopod scrub, and playas. Flowers March to May.	Moderate potential to occur on-site in desert scrub habitat.
Kern buckwheat (<i>Eriogonum kennedyi</i> var. <i>pinicola</i>)	CNPS Rank 1B.1	Perennial herb 2 to 6 inches tall in open places on clay soil. Found in chaparral and pinyon and juniper woodland. Flowers May to June.	Low potential to occur on-site due to lack of chaparral and woodland habitats.
Red Rock Canyon monkeyflower (<i>Erythranthe rhodopetra</i>)	CNPS Rank 1B.1	Annual herb found in sandy, canyon washes and Mojavean desert scrub. Flowers March to April.	High potential to occur on-site in Pine Tree Canyon Wash and moderate potential in smaller washes on-site.
Red Rock poppy (<i>Eschscholzia minutiflora</i> ssp. <i>twisselmannii</i>)	CNPS Rank 1B.2	Yellow-flowered annual approximately 1 foot or taller that occurs on volcanic tuff material. Flowers March to May.	Moderate potential to occur on-site in soils with volcanic tuff.
Pale-yellow layia (<i>Layia heterotricha</i>)	CNPS Rank 1B.1	Annual herb found in alkaline or clay soils in cismontane woodland, pinyon and juniper woodland, and grasslands.	Low potential to occur on-site due to the lack of woodlands, coastal scrub, and grassland.
Sagebrush loeflingia (<i>Loeflingia squarrosa</i> var. <i>artemisiarum</i>)	CNPS Rank 2B.2	Minute annual with spine-tipped leaves on sandy soil and dunes. The Jepson Manual does not recognize variety, but CNPS does. Flowers April to May.	Moderate potential to occur in sandy soils.
Solitary blazing star (<i>Mentzelia eremophila</i>)	CNPS Rank 4.2	Annual herb found in Mojavean Desert scrub. Flowers March to May.	High potential to occur in desert scrub on-site.
Creamy blazing star (<i>Mentzelia tridentata</i>)	CNPS Rank 1B.3	Annual with somewhat thick dark green leaves and cream-colored flowers on coarse rock gravel. Found in Mojavean Desert scrub. Flowers March to May.	High potential to occur in desert scrub on-site.

Table 3.3-2. Potentially Occurring Special-Status Plant Species in the Project Area			
Tehachapi monardella (<i>Monardella linoides</i> ssp. <i>oblonga</i>)	CNPS Rank 1B.3	Perennial rhizomatous herb found in lower montane coniferous forest, pinyon and juniper woodland, and upper montane coniferous forest. Flowers June to August.	Low potential to occur on-site due to lack of woodland and forest habitat.
Large-flowered nemacladus (<i>Nemacladus secundiflorus</i> var. <i>secundiflorus</i>)	CNPS Rank 4.3	Annual herb found in gravelly openings in chaparral and valley and foothill grassland. Flowers April to June.	Low potential to occur on-site due to lack of chaparral and grassland habitats.
Bakersfield cactus (<i>Opuntia basilaris</i> var. <i>treleasei</i>)	Federal Endangered; State Endangered; CNPS Rank 1B.1	Perennial stem succulent. Found in sandy or gravelly areas of chenopod scrub, cismontane woodland, and valley and foothill grassland.	Low potential to occur on-site in desert scrub habitat. The species was not detected during 100% coverage surveys of the Alternative 2 and 3 gen-tie line alignments.
Fragile pentachaeta (<i>Pentachaeta fragilis</i>)	CNPS Rank 4.3	Annual herb found in foothill woodlands. Flowers March to June.	Low potential to occur on-site due to lack of woodland habitat.
Adobe yampah (<i>Perideridia pringlei</i>)	CNPS Rank 4.3	Perennial herb found in chaparral and foothill woodland. Flowers April to June.	Low potential to occur on-site due to lack of woodland and chaparral habitat.
Hubby's phacelia (<i>Phacelia hubbyi</i>)	CNPS Rank 4.2	Annual herb found on gravelly or rocky slopes in chaparral or coastal scrub. Flowers April to June.	Low potential to occur on-site due to lack of coastal scrub and chaparral habitat.
Charlotte's Phacelia (<i>Phacelia nashiana</i>)	CNPS Rank 1B.2	Low-growing annual with somewhat thick leaves and deep blue flowers growing on gravelly and talus slopes. Flowers March to June.	Moderate potential to occur on-site. Known from the general vicinity of the site and its surroundings.
Mojave fish-hook cactus (<i>Sclerocactus polyancistrus</i>)	CNPS Rank 4.2	Perennial stem succulent found in Mojave desert scrub and pinyon and juniper woodland.	Moderate potential to occur on-site in desert scrub.

CNPS = California Native Plant Society

3.3.3 Invasive, Nonnative Plant Species

Two invasive plant species have been documented sporadically within the project area: Mediterranean grass (*Schismus barbatus*) and Sahara mustard (*Brassica tournefortii*). These species and their presence within the project area are briefly described below.

- **Mediterranean grass** was observed infrequently within the project area in association with creosote bush. The California Invasive Plant Council (Cal-IPC) has determined that this plant has a limited invasiveness rating in California (Cal-IPC 2006). The BLM and other land management agencies recognize that because of the widespread distribution of Mediterranean grass, this species is not considered feasible to control, especially in relatively small areas such as the project area; therefore, weed abatement efforts for Mediterranean grass are not typically required.
- **Sahara mustard** was observed southeast of the project area in a built drainage ditch running parallel to SR-14. Cal-IPC has declared this plant to be highly invasive (Cal-IPC 2006). The BLM and other agencies recognize that because of the widespread distribution of Sahara mustard, this species is not considered feasible to control, especially in relatively small areas such as the project area; therefore, weed abatement efforts for Sahara mustard are not typically required.

3.4 Biological Resources – Wildlife

This section describes the wildlife resources present or potentially present within the project area. Sources consulted to summarize the known wildlife resources in the project area include the technical reports noted above in Section 3.3. Biological surveys conducted for the solar facility site and the Alternative 2 and 3 gen-tie line alignments proposed on Federal land and west of SR-14 are summarized in Table 3.3-1. As noted in Section 3.3, biological resource surveys were not performed within the entirety of the Alternative 4 private lands gen-tie line alignment. However, given the homogeneity of the landscape, wildlife resources present within the private land gen-tie line alignment are expected to be similar to those described below.

Wildlife species occurring in the project area are typical of those common in creosote bush–white bursage scrub habitat of the western Mojave Desert. Common mammals observed within the project area and vicinity included white-tailed antelope squirrel (*Ammospermophilus leucurus*), black-tailed jackrabbit (*Lepus californicus*), and coyote (*Canis latrans*; scat only). In addition, four desert kit fox pups, an uncommon inhabitant of the Mojave Desert, were observed in a burrow south of the project area during 2011 surveys. Common reptiles observed included tiger whiptail (*Aspidoscelis tigris*), zebra-tailed lizard (*Callisaurus draconoides*), Mohave rattlesnake (*Crotalus scutulatus*), long-nosed leopard lizard (*Gambelia wislizenii*), and common side-blotched lizard (*Uta stansburiana*). Desert habitats typically support a low diversity of resident bird species, although a greater diversity of bird species may be temporarily observed in

these habitats during migration movements. Non-raptor bird species observed included horned lark (*Eremophila alpestris*), common raven (*Corvus corax*), rock wren (*Salpinctes obsoletus*), black-throated sparrow (*Amphispiza bilineata*), white-crowned sparrow (*Zonotrichia leucophrys*), and house finch (*Carpodacus mexicanus*). All of these bird species except white-crowned sparrow may nest in the project area or in the immediate vicinity.

The project area does not lie within a wildlife connectivity area as identified by the California Essential Habitat Connectivity Project (Spencer et al. 2010). However, at the local level, wildlife species are likely to use the project area and surrounding large expanses of open habitat for movement related to dispersal and home range activities. Given the relatively uniform landscape and extent of open space in the project area and vicinity, wildlife is not likely concentrated through narrow corridors. The north/south-orientated SR-14 poses an existing barrier to wildlife movement. Although wildlife species likely cross SR-14 at-grade or through undercrossings, traffic is heavy enough on this road to pose risks to species attempting to cross. Movement likely becomes increasingly concentrated west of the project area, toward Barren Ridge and the foothills of the southern Sierra Nevada mountain range. Movement west of the project area likely becomes concentrated within prominent canyons, such as Jawbone and Pine Tree Canyons.

Regionally, the project area is located within the Pacific Flyway, a major north/south migration route for birds that travel between North and South America. Hundreds of species use this migratory route each year. Several well-studied migrant stopover sites provide a picture of the diversity of migrant birds in the vicinity of the project area. More than 210 species of birds have been recorded at Butterbrecht Spring, located approximately 12.5 miles north of the project area (eBird 2014). More than 240 species of birds have been recorded at the California City Central Park, which is located approximately 8.5 miles southeast of the project area (eBird 2014). Although the project area lacks open water or lush vegetated stopover habitat that might attract migrant birds, a large diversity of species could be expected to pass through the project area during migratory periods due to its location in the Pacific Flyway.

Koehn Dry Lake is located approximately 11 miles to the northeast of the project area. Koehn Dry Lake is designated as an Audubon State Important Bird Area and is part of the North Mojave Dry Lakes Important Bird Area (Audubon 2014). This Important Bird Area refers to four large dry lakes and associated seasonal wetlands between Ridgecrest and Barstow in the northern Mojave Desert: China Lake, Searles Dry Lake, Koehn Dry Lake, and Harper Dry Lake (Audubon 2014). Thousands of water birds stop over at these lakes during migration (Audubon 2014), and more than 40 species of birds have been recorded at Koehn Dry Lake (eBird 2014).

3.4.1 Special-Status Wildlife Species

Special-status wildlife species analyzed herein include the following types of species: (1) listed, proposed for listing, or candidates for listing as threatened or endangered by USFWS under the ESA; (2) afforded protections under the Bald and Golden Eagle Protection Act (BGEPA);

(3) afforded protections under the MBTA; (4) listed, proposed for listing, or candidates for listing as threatened or endangered by CDFW under the CESA; (5) identified as a Fully Protected Species or Species of Special Concern (SSC) by CDFW; or (6) afforded protection per California Fish and Game Code Section 3503 et seq.

Special-status wildlife species documented during biological surveys or with the potential to occur based on site conditions are discussed in the following subsections. For the purposes of this section, species are organized by federally listed species (i.e., species listed under the ESA), State-listed species (i.e., species listed under the CESA), and other special-status species (i.e., species afforded protections under the BGEPA and/or MBTA, or identified by CDFW as a SSC or Fully Protected Species). In some instances, species fall into multiple categories (e.g., a species that is both federally and State listed); however, species are discussed under a single category for the purposes of this section.

Federally Listed Species

Desert Tortoise

Desert tortoise is federally listed by USFWS as threatened under the ESA. This species is also listed as threatened by CDFW under the CESA. Critical Habitat was designated by USFWS for desert tortoise in February 1994 (59 Federal Register 5820). The project area is not located within desert tortoise Critical Habitat; the nearest Critical Habitat area designated for desert tortoise is approximately 11 miles northeast of the project area.

The project area is located at the far western edge of the desert tortoise's range, and provides moderately suitable habitat for the species. The creosote bush-white bursage scrub that dominates the project area is a vegetation community that is characteristic of desert tortoise habitat. Also, gravelly loamy sand and loamy sand soils present within the project area are suitable for digging burrows, pallets (i.e., shallow depressions used to regulate body temperature and reduce water loss), or rain catchment basins. Although suitable vegetation and soils are present, the project area does not support the vertical structure (e.g., caliche caves and high banks associated with washes, alluvial fans, and canyons) or rockiness that is generally more typical of the highest quality desert tortoise habitat in the western Mojave Desert.

Habitat within the project area is degraded due to proximity to existing transmission line corridors, BLM recreational trails, and SR-14. Data from several studies (Boarman 1994; LaRue 1993; Marlow et al. 1997; Nicholson 1978) strongly support the hypothesis that heavily traveled roads are mortality sinks for tortoises. Further, Von Seckendorff Hoff and Marlow (2002) suggested that heavily traveled roads generate a "dead zone" on either side of the road where desert tortoise densities are depressed. The size of depressed zones around roads varies with the amount of use of the road and other factors. Although the exact size of the dead zone associated with SR-14 is not known, traffic on the road is heavy enough to depress the density of tortoises around the road, and reduce connectivity of desert tortoise habitats in the area.

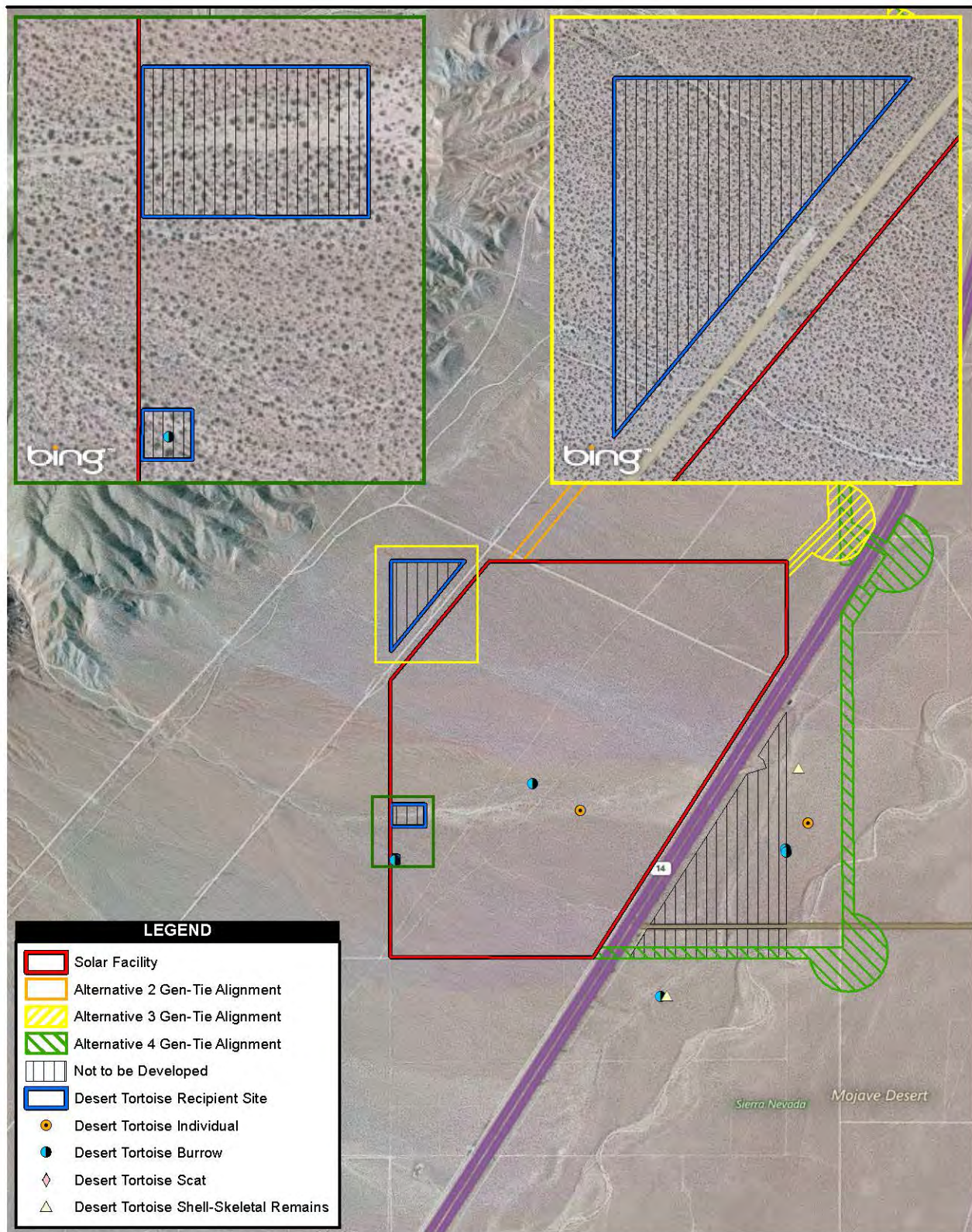
Focused desert tortoise surveys were conducted in accordance with the Pre-Project Survey Protocol for Potential Desert Tortoise Habitats (USFWS 2010) within the 598-acre solar facility site in September and October 2010 (Sundance Biology 2010). Surveyors walked 191, 1.2-mile transects spaced approximately 10 meters (30 feet) between transect centerlines (the standard width for desert tortoise presence/absence surveys) that covered the entirety of the solar facility parcel. In accordance with the desert tortoise survey protocol (USFWS 2010), 200-meter Zone of Influence transects were not conducted around the solar facility site given that the parcel is non-linear and greater than 200 acres.

One juvenile (midline carapace length less than 180 millimeters) was observed in a burrow within the solar facility site during 2010 protocol surveys (Figure 3.4-1). Two additional desert tortoise individuals were documented east of the solar facility site and SR-14. One of these individuals was an adult female documented during a burrowing owl survey (Sundance Biology 2010), and the other was a juvenile male (approximately 165 millimeters midline carapace length) discovered at the intersection of SR-14 and Phillips Road during field reconnaissance surveys (Rincon 2011a). Given that both of these individuals were observed east of SR-14, it is unlikely that these individuals use the portion of the solar facility site that would be developed for normal home range activities (e.g., foraging) given the barrier to movement that SR-14 creates. In addition to these sightings, suitable burrows (some with scat or tracks) were detected within and outside of the solar facility site. Desert tortoise shell skeletal remains were also observed south of the solar facility site during 2010 surveys.

Focused desert tortoise surveys following USFWS guidelines (USFWS 2010) were also conducted in April and May 2011 for the Alternative 3 gen-tie line alignment proposed on BLM land.

These surveys included Zone of Influence transects at three 200-meter (approximately 650-foot) intervals out to approximately 600 meters (Rincon 2011a, 2011b). The Zone of Influence transects associated with 2011 desert tortoise surveys covered the private land gen-tie line alignment. Four desert tortoise individuals and sign (i.e., scat, burrows, shell-skeletal remains) were detected along the Alternative 3 gen-tie line alignment during 2011 focused surveys (Figure 3.4-1). Three of the four desert tortoises documented in 2011 were considered adults, and one was considered a sub-adult (classified according to desert tortoise expert Kristen Berry of USGS); however, all four desert tortoises are considered adults per USFWS classification (Rincon 2011a, 2011b). One of the adults was noted to be female.

One desert tortoise was documented during a 2014 habitat assessment conducted for the Alternative 2 gen-tie line alignment on BLM land (Figure 3.4-1). This individual was considered to be an adult and was located within the private land gen-tie line alignment (AECOM 2014e).



Source: RE Cinco 2013; AECOM 2013; Image courtesy of USGS Image courtesy of the Nevada State Mapping Advisory Committee © 2014 Microsoft Corporation © 2014 Nokia © AND

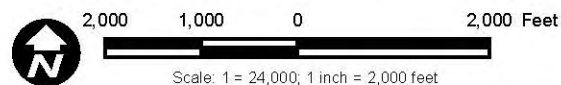


Figure 3.4-1
Desert Tortoise Sites

State-Listed Species

Mohave Ground Squirrel

Mohave ground squirrel is State listed by CDFW as threatened under the CESA. The entire project area, located on the western fringe of the species' range, provides suitable creosote bush scrub habitat for the Mohave ground squirrel, although potentially suitable burrows were not commonly encountered during the field surveys. This species has been documented in the vicinity of the project area, including within Jawbone Canyon and near the southern edge of Red Rock Canyon State Park. All public lands west of SR-14 are included in the Mohave Ground Squirrel Conservation Area, as designated in the West Mojave Plan (BLM 2005).

Swainson's Hawk

Swainson's hawk (*Buteo swainsoni*) is State listed by CDFW as threatened under the CESA. The project area supports suitable foraging habitat for Swainson's hawk; however, no suitable nesting habitat occurs in the project area. This species was not observed during biological surveys conducted for the proposed project.

Other Special-Status Species

Burrowing Owl

Burrowing owl is designated as an SSC by CDFW. Burrowing owl surveys were conducted within the project area in 2011 per the protocols outlined in the Staff Report on Burrowing Owl Mitigation (CDFG 1995). Four potential burrows or burrow complexes were observed in the project area and immediate vicinity. Fresh burrowing owl sign was detected at one of these burrows in 2011; however, no owls were observed. The three remaining potential burrows appeared inactive, with evidence of old whitewash and/or pellets with small mammal bones/remains present.

American Badger

American badger is designated as an SSC by CDFW. The project area provides suitable habitat for American badger, and three badger dens were observed in the project area and immediate vicinity. One American badger was observed in a burrow west of SR-14 in 2011.

Other Raptors and Migratory Birds

Other raptors and migratory birds are afforded protections under California Fish and Game Code Section 3503 et seq. and the MBTA. Two raptor species, ferruginous hawk (*Buteo regalis*) and red-tailed hawk (*Buteo jamaicensis*), were detected during surveys conducted for the project in 2011. Ferruginous hawk was observed soaring over the ridgeline west of the project area in April 2011. This species does not nest within California (Polite and Pratt 1999), and the project area only contains suitable wintering and foraging habitat for this species. Red-tailed hawk was observed soaring along the ridgeline west of the project area in May 2011. Additionally, a red-

tailed hawk nest was detected on an existing utility tower west of the project area. No other raptor species were detected during surveys.

All avian species detected during surveys for the proposed project are protected under the MBTA. Although these species are protected by the provisions of the MBTA, they are not considered rare, threatened, or endangered by local, State, or Federal regulations, or in need of conservation. Two additional species not detected during surveys for the proposed project—loggerhead shrike (*Lanius ludovicianus*) and Le Conte's thrasher (*Toxostoma lecontei*)—are known to be year-round or winter residents in the western Mojave Desert and may occur within the project area. Both the loggerhead shrike and Le Conte's thrasher are designated as SSCs by CDFW.

The project area also contains suitable foraging habitat for golden eagle, a species afforded specific protections under the BGEPA and a CDFW Fully Protected Species. However, suitable golden eagle nesting habitat is not present within the project area. The closest active golden eagle nest was documented in 2011 approximately 5 miles west of the project area (CH2M Hill 2011).

Invasive, Nonnative Wildlife Species

The project area contains evidence of domestic livestock presence (e.g., cow dung, domestic sheep scat). BLM lands surrounding the project area are part of the Hansen Common Grazing Allotment, which is used for cattle and sheep grazing. Excessive grazing by domestic livestock can result in deterioration of desert habitats by altering plant species composition and reducing cover of shrubs and perennial grasses. However, grazing in the area is infrequent, and grazing pressure is light. There is no evidence of excessive grazing such as increased erosion, soil crust destruction, or denuded areas. No other nonnative wildlife species have been documented from the project area.

3.5 Climate Change

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs), in reference to the fact that greenhouses retain heat. It is believed that emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. This phenomenon is commonly referred to as climate change.

Federal GHG regulations adopted by the U.S. Environmental Protection Agency (USEPA) include the Mandatory Greenhouse Gas Reporting Rule (40 CFR Part 98) and the Prevention of Significant Deterioration and Title V Greenhouse Gas Tailoring Rule (40 CFR Part 52).

3.6 Cultural, Historic, and Paleontological Resources

3.6.1 Cultural and Historic Resources

A records and literature search and pedestrian field survey were conducted to identify cultural resources in the project area and evaluate National Register of Historic Places (NRHP) eligibility of identified resources within the area of potential effects (APE). These efforts are reported in the Cultural Resources Inventory Report for the Proposed Recurrent Energy Cinco Solar Facility Project, Kern County, California (AECOM 2014c); the Recurrent Energy Cinco Gen-Tie Line Project, Kern County, California (AECOM 2014d); and the Survey Results for the All-Private Gen-Tie Alternative for the RE Cinco Project (AECOM 2014e), which are included as confidential Appendix E. This section summarizes the findings of these analyses.

Cultural resources can be generally divided into archaeological resources, architectural resources, and traditional cultural properties, as follows:

- Archaeological resources include prehistoric and historic locations or sites where human actions have resulted in detectable changes to the area. This can include changes in the soil, as well as the presence of physical cultural remains. Prehistoric site types expected within the project area include lithic scatters, habitation sites, and ceramic scatters. Historic archaeological resources are those post-dating European contact. These resources may include refuse scatters and dumps, remnants of farms or ranches, camps or temporary settlements, cairns, transportation routes, and utility or water conveyance features.
- Architectural resources are elements of the environment constructed by humans. Included are standing buildings, dams, bridges, and other residential, commercial, and industrial structures.
- Traditional cultural properties are resources associated with beliefs and cultural practices of a living culture, subculture, or community. These beliefs and practices must be rooted in the group's history and be important for maintaining the cultural identity of the group. Archaeological sites; locations of events; sacred places; and resource areas, including hunting or gathering areas, may be traditional cultural properties.

Area of Potential Effect

The APE for the project was defined based on the direct and indirect effects that could occur as a result of implementation of project. Typically, the APE for archaeological resources is defined by the proposed ground disturbance area(s) or areas of potential direct effects. For historical resources, including existing standing structures, the APE is often defined more broadly to include areas of potential indirect visual, auditory, or atmospheric effects.

Solar Facility Area of Potential Effect

As proposed, the private lands solar facility project would be constructed on approximately 500 acres of land on T31S, R36E, Section 24 of the Mojave NE USGS 7.5-minute quadrangle. However, the direct effects APE for the solar facility project encompasses approximately 600 acres and includes the majority of Section 24 of the quadrangle. Six-hundred acres of land on Section 24 were included in this analysis to retain the possibility for future use and design changes without undergoing a separate environmental review process.

The indirect effects APE for the solar facility project consists of approximately 2,440 acres, encompassing 0.5 mile in each direction from the solar facility site boundary. The direct effects and indirect effects APEs for the solar facility are shown in Figure 3.6-1.

Alternative Gen-Tie Lines Areas of Potential Effect

The direct effects APEs for the Alternative 2 and Alternative 3 gen-tie lines were established in consultation with the BLM and received State Historic Preservation Office (SHPO) concurrence on April 30, 2014. The private lands Alternative 4 gen-tie line APE is based on the proposed Alternative 4 ROW width. In all, the direct effect APEs for all of the gen-tie line alternatives encompass approximately 350 acres. Each is shown in Figure 3.6-2, and they include the following areas:

- The Alternative 2 gen-tie line APE would be 2.5 miles long and would be located mainly within T31S, R36 ½ E, Section 24 of the Mojave NE USGS 7.5-minute quadrangle. Almost 2 miles of this alternative crosses Federal lands. The archaeological APE for Alternative 2 is a 300-foot-wide corridor (150 feet on either side of the centerline of the alternative gen-tie line alignment), with additional 525-foot radial fan areas at each turn in the alignment, as well as the area between the existing LADWP maintenance road and the western edge of the archaeological APE corridor to provide options for pole locations and spur roads.
- The Alternative 3 gen-tie line APE would be 2 miles long and would be located primarily in T31S, R36 ½ E, Sections 24, 25, and 13 of the Mojave NE USGS 7.5-minute quadrangle. Alternative 3 would cross approximately 1.4 miles of Federal land. The archaeological APE along these lengths is a 300-foot-wide corridor (150 feet on either side of the centerline of the alternative gen-tie line alignment), with additional 525-foot radial fan areas at each turn in the alignment.
- The Alternative 4 gen-tie line APE would be 3.6 miles long and would be located exclusively on private land, primarily on T31S, R36 ½ E, Sections 13, 24, 25, and T31S, R37E, Sections 18, 19, 30, and 31 of the Mojave NE USGS 7.5-minute quadrangle. The archaeological APE for Alternative 4 is a 150-foot-wide corridor with additional 525-foot radial fan areas at each turn in the alignment.

The indirect effects APE consists of approximately 3,650 acres encompassing 0.5 mile in each direction from the centerlines of Alternatives 2, 3, and 4. The indirect APE is shown in Figure 3.6-2. As can be seen in Figures 3.6-1 and 3.6-2, the APEs for the alternative gen-tie line alignments and the solar facility site overlap in several locations.

Investigation and Survey Results

Analyses completed for the APEs included archival research at the Southern San Joaquin Valley Information Center at the University of California, Bakersfield, consultation of historic topographic maps, field surveys to determine the presence of cultural resources located within the APEs, and evaluation of the significance of cultural resources within the APEs that could be affected by the proposed project.

Records Search Results

Solar Facility Area of Potential Effects

The archival records search identified 10 survey-level investigations, one site evaluation, and one cultural resources records search and site visit summary report that have been previously conducted in and around the solar facility APEs. Four of those surveys overlap with portions of the solar facility project, and one survey covered the entire 600-acre direct effects APE. In addition, a Class I and Class II Inventory Report was prepared for the BRRTTP in 2011, which is not on file at the information center. The northern-most portion of that project's proposed new 230-kV transmission line and 230-kV circuit overlaps with the northwest corner of the solar facility direct effects APE.

The study did not include a pedestrian survey of this area, so no new information was obtained from the report, and all previously recorded resources were captured by the original archival records search.

The archival records search identified seven previously recorded cultural resources that are located within a 1-mile radius of the project. Of these resources, only three are located within the boundaries of the solar facility site: one historic refuse scatter (P-15-016275) and two prehistoric isolates (P-15-016273, P-15-016274). The other four identified resources are located within the 1-mile records search buffer zone: three historic resources and a single prehistoric resource. The historic resources are the Los Angeles Aqueduct (CA-KER-3549H), the Southern Pacific Railroad (CA-KER-3366H), and a refuse scatter with a prehistoric flake isolate (P-15-007706). The prehistoric resource consists of several buried hearth features (CA-KER-3939).

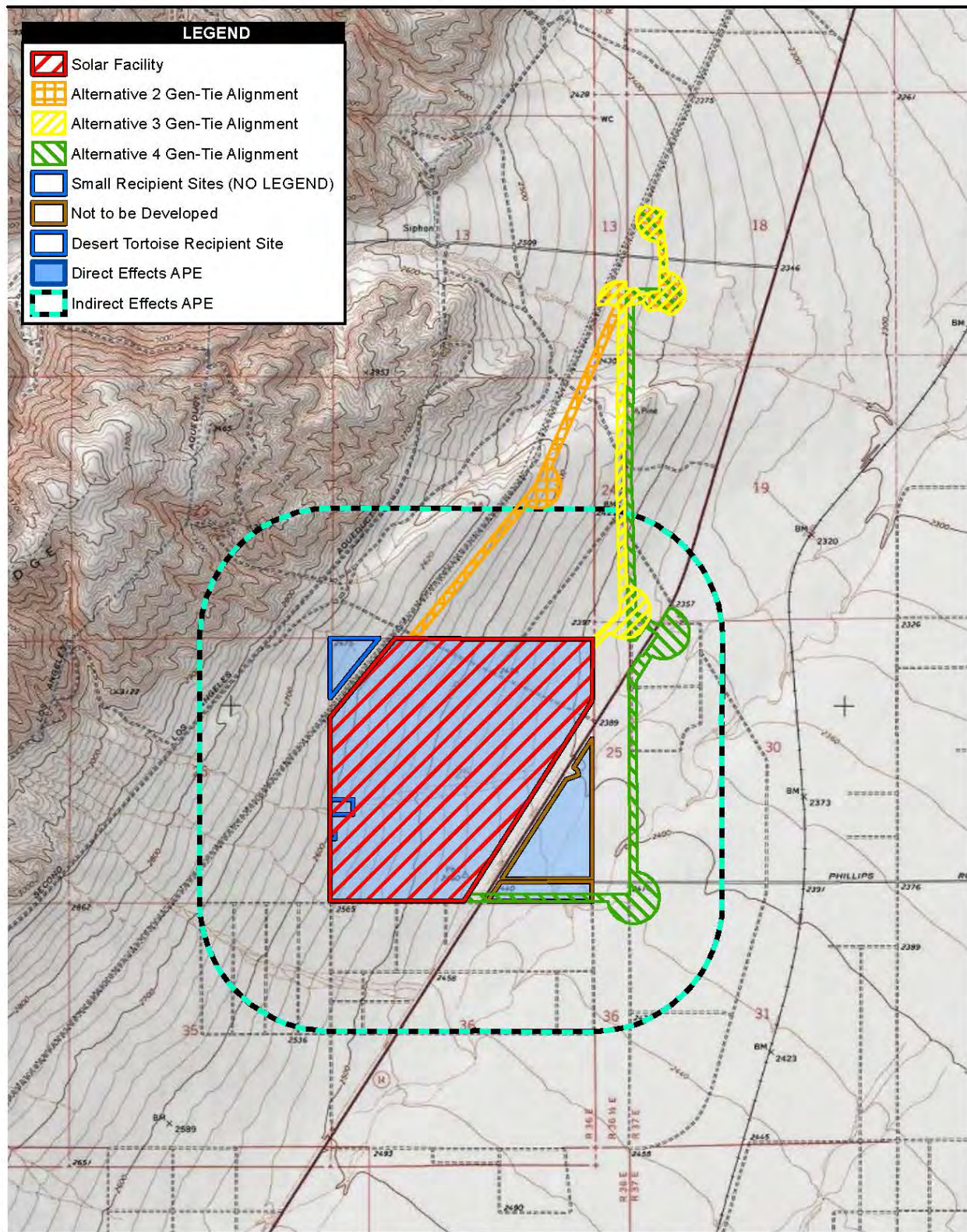


Figure 3.6-1
Solar Facility Cultural Resources
Area of Potential Effects

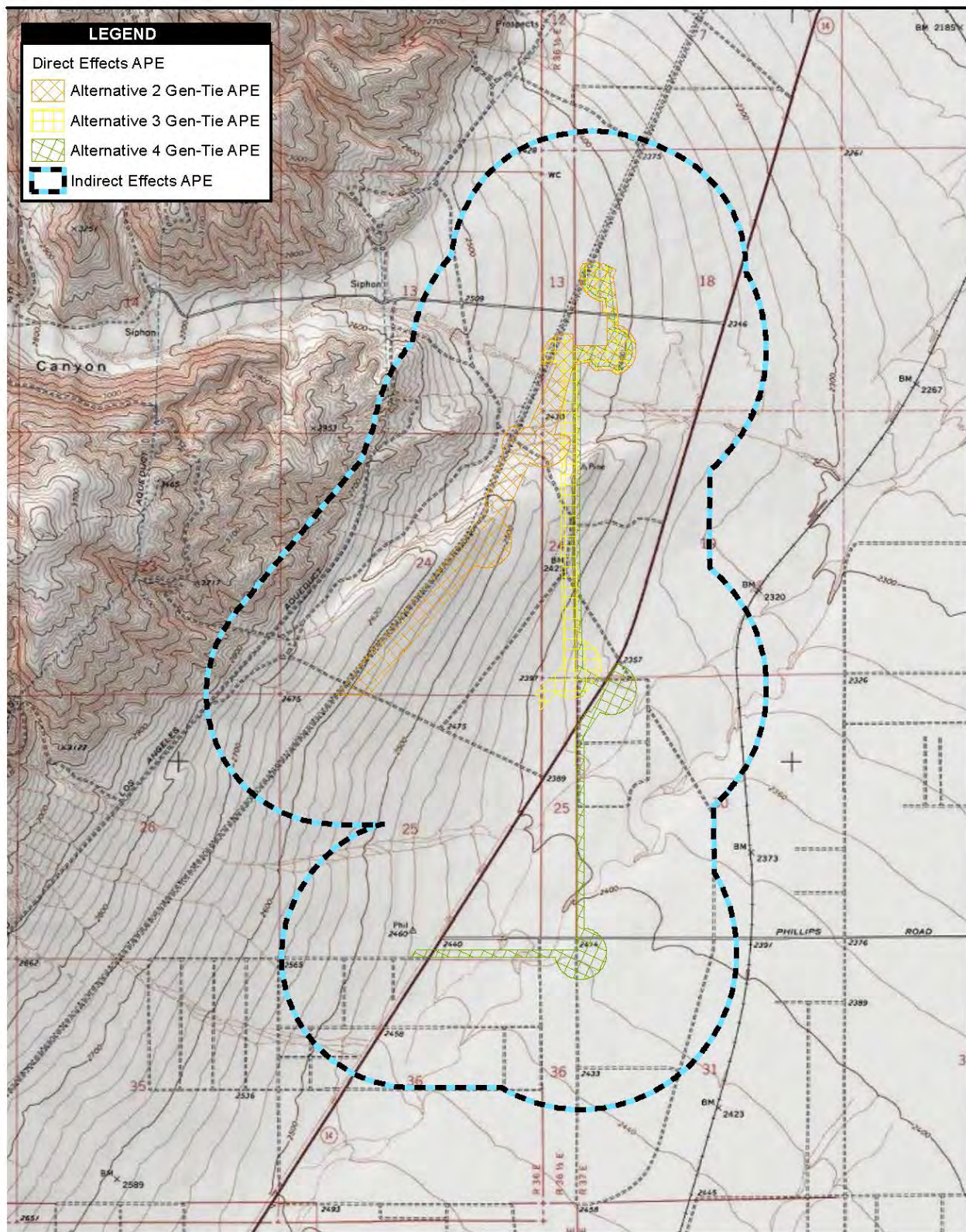


Figure 3.6-2

Alternative Gen-Tie Alignments Cultural Resources Area of Potential Effect

RE Cinco Solar Facility HCP Environmental Assessment

Path: P:\2011\11280215.01_Recurrent_PV\06GIS\6.3_Layout\BA\Cinco\USFWS\Cinco-BA GT Cultural APE.mxd, 9/18/2014, irelandm

Alternative Gen-Tie Lines Areas of Potential Effects

The archival records search identified 15 survey-level investigations that have been previously conducted in and around the alternative gen-tie APEs. Eleven of those surveys overlap with portions of the alternatives' direct effects APEs. Approximately 11% of the Alternative 2 direct effects APE (17 of 150 acres), 20% of the Alternative 3 direct effects APE (17 of 100 acres), and 40% of the Alternative 4 direct effects APE (43 of 105 acres) have been previously surveyed. In addition, a Class I and Class II Inventory Report was prepared for the BRRTP in 2011, which is not on file at the information center. The northern-most portion of BRRTP's proposed new 230-kV transmission line and 230-kV circuit overlaps with portions of Alternative 2 and Alternative 3 (Power Engineers 2011). However, the BRRTP study did not include a pedestrian survey (Class III) of this area, so no new information was obtained from the BRRTP report, and all previously recorded resources were captured by the original archival records search.

The archival records search identified 48 previously recorded archaeological resources that are located within a 1-mile radius of the three alternative gen-tie line alignments, only one of which overlaps with any alternatives' direct effects APE. One prehistoric isolate (P-15-015956) is located within the direct effects APE for Alternatives 2 and 3. The other 47 identified resources are located within the adjacent private lands solar facility site or the 1-mile records search buffer zone. These include 28 prehistoric resources, five multicomponent sites, and 14 historic resources.

Historic Maps

Historic USGS topographic maps from 1915 through 1973 were consulted to identify historic architecture resources in the project area. No structures were observed within the project area's direct effects APE on any of the historic maps. However, two road segments crossed the direct effects APE as early as 1915. These historic roads were observed during the current survey and recorded as resources CS-S-H-027 and CS-S-H-028.

Two structures were observed within the project area's indirect effects APE on the historic maps. The first structure appears on Township 31 South, Range 36 ½ East, Section 25 of the 1915 map, and the second structure is present on Township 31 South, Range 36 East, Section 30 of the 1953 map. Both structures appear to have been demolished sometime during the mid-20th century, as neither appears on maps after 1953.

Pedestrian Survey Results

Solar Facility Area of Potential Effects

Based on the results of the Southern San Joaquin Valley Information Center records search and review of historic topographic maps, a reconnaissance survey was not conducted for resources within the indirect effects APE. However, an intensive pedestrian survey of the direct effects APE resulted in the identification of 15 archaeological sites, all of which are historic in age. One

of the sites, P-15-016275, was previously recorded as a trash scatter in 2011. However, the remainder of the archaeological sites (CS-S-H-001, -002, -003, -004, -005, -006, -008, -020, -021, -022, -023, -024, -027, -028) are newly identified resources.

The survey also identified 33 isolated finds, of which 28 are historic and five are prehistoric. The two previously recorded isolates (P-15-016273, -016274) were not relocated during these efforts; therefore, all 33 isolates were newly identified. Such resources are classified as single artifacts or collections of two or fewer artifacts that were separated from other cultural materials by more than 30 meters. A total of 33 isolates were identified within the direct effects APE.

The majority of the cultural resources (sites and isolates) identified in the direct effects APE are historic in age, and consist predominately of metal cans, with smaller quantities of glass bottles and jars, broken ceramics, and sundry metal items. Historical features include a possible prospect pit, two historic roads, and debris scatters from the early to mid-20th century. Prehistoric cultural materials include mostly flaked stone debitage, with smaller amounts of flaked stone tools.

Alternative Gen-Tie Lines Areas of Potential Effect

An intensive pedestrian survey of the direct effects APEs for all of the gen-tie line alternatives resulted in the identification of eight archaeological sites, of which four are historic and four are prehistoric. One of the sites, P-15-007706, was previously recorded as an isolate located just outside of the direct effects APE. However, field staff identified material associated with P-15-007706 within the direct effects APE and recorded the resource as a site. The remaining archaeological sites are newly identified resources.

The survey also identified 16 isolated finds, of which 14 are prehistoric and two are historic. Isolated resources are defined as two or fewer artifacts that were separated from other cultural materials by more than 30 meters. A total of 16 isolates were identified within the direct effects APE.

The majority of the archaeological resources (sites and isolates) identified in the direct effects APE are prehistoric in age, and consist predominately of flaked stone debitage, with smaller amounts of flaked stone tools. Historic archaeological material includes mostly metal cans, with smaller quantities of glass bottles and jars, broken ceramics, and sundry metal items. Historical features included debris scatters from the early to mid-20th century.

3.6.2 Paleontological Resources

The project area is spread across a number of geologic units. A Paleontological Resources Survey Report prepared in 2014 (Applied Earthworks 2014) assessed each of these units for potential to yield fossil deposits. The results of the assessment are summarized below for each of the rock units within the project area.

- **Cretaceous quartz monzonite**, ranging from 66 million to 145 million years of age, is exposed in a narrow band that crosses all of the alternative gen-tie line alignments south of Pine Tree Canyon Wash. Plutonic igneous rocks of this type do not contain fossils due to their high heat of formation deep below the surface of the Earth.
- **Quaternary older alluvium**, ranging from approximately 11,000 to 1.8 million years of age, is exposed in a band that crosses all of the proposed gen-tie line alignments approximately mid-way between the solar facility site and the Barren Ridge Switching Station. This band is approximately 0.25 mile in width and extends to a depth of approximately 300 feet beneath the surface. These fluvial and alluvial fan deposits have a moderate potential to yield vertebrate fossils. Although no vertebrate fossil localities have been recorded directly within the project area, fossils have been recorded nearby from similar sedimentary deposits as those occurring in the project area.
- **Holocene alluvial deposits** that are generally younger than 11,000 years of age cover the bulk of the solar facility site and the remaining project area. Holocene deposits are generally considered too young to contain fossilized remains.

Based on this information, the bulk of the project area has a low sensitivity for paleontological resources. The band of Quaternary older alluvium approximately mid-way between the private lands solar facility site and the Barren Ridge Switching Station exhibits moderate sensitivity with respect to these resources.

3.7 Energy Resources

The project area is not currently used for the production of energy. Fossil fuel resources such as oil, natural gas, and coal are not known to occur in the project vicinity. Wind energy generation occurs atop the hills on the far side of Barren Ridge several miles to the northwest of the project area, as well as in areas to the south near Mojave. The project area itself is generally not suitable for utility-scale production of wind energy, owing to the lack of consistent and reliable wind.

Solar energy is currently not produced in the immediate vicinity, but construction is currently underway on the Beacon solar facility, approximately 2 miles north of the project area on the east side of SR-14. Overall, the project area presents strong potential for solar power generation based on available sunlight, favorable climate, and proximity to available transmission infrastructure.

The BLM-managed lands that surround the private lands project area and would be crossed by the Alternative 2 and 3 gen-tie line alignments are part of a designated energy corridor. The corridor was established, in part, to expedite applications to construct or modify electricity transmission and distribution facilities within such corridors. Figure 1-2 shows the locations of the designated corridor sections.

The project area currently contains two existing transmission lines: Bonneville Power Administration's and LADWP's Pacific Direct Current Intertie 500-kV transmission line and LADWP's existing 230-kV Barren Ridge–Rinaldi Transmission Line. An additional 200-foot-wide ROW has been granted by the BLM to LADWP for the planned 230-kV BR RTP, and is scheduled for construction beginning in 2015.

3.8 Fire and Fuels

Trees are absent from the project area. Shrub vegetation in the project area is sparse and widely spaced, thus limiting the amount of woody fuel available to wildfires. Creosote is the dominant shrub, with the smaller white bursage as the second-most-common species. As such, fuel loads are generally limited, and fires in the project area are typically small in extent. Fire frequency is low. During field surveys, no direct evidence of recent fires was noted.

Favorable but infrequent seasonal rains can produce greater amounts of vegetative growth, particularly low-lying, mostly nonnative annual grasses and herbaceous plants. After setting seed, these short-lived plants die. Once dried and cured, these plants can temporarily increase fire risk by adding fine fuels that provide fuel continuity to carry fire over the distances between shrubs. Fire risk can be further enhanced by high winds, which occasionally occur in the area. The time of greatest fire risk is generally in late spring and summer following a favorable winter rainy season. The spread of annual invasive plant species such as Saharan mustard, which can grow in substantial quantities and remain in place well after it has seeded and cured, can greatly enhance the ability of fire to spread (Brooks et al., 2004; Marushia et al. 2012). Saharan mustard is present in the project area, although its current local distribution is limited. Extended periods of drought may make perennial vegetation like creosote more susceptible to fire, and thus increase fire risk.

Human activities make up the preponderance of fire ignitions in the region. Fires caused by vehicles, construction activities, and recreational activities have occurred in the area. Small fires adjacent to SR-14 are not uncommon, and are typically the result of discarded cigarettes from vehicles. Most of these fires either burn themselves out or are quickly contained, but the risk from these fires can be heightened by the presence of vegetation adjacent to roadways. Invasive species such as Saharan mustard are most common near roadways, and can help to spread fires started from roadways. Increased distribution of Saharan mustard and other invasive plant species into adjacent areas, combined with prolonged drought and other fuels-related factors, could permanently increase the risk of fire in the area.

3.9 Hazardous and Solid Wastes

The project area is largely open desert, with no existing human disturbance beyond the existing LADWP transmission lines, SR-14, and several unimproved access roads and OHV tracks. No commercial, industrial, or similar operations are currently present in the area, nor are any known to have occurred in the past. There is no evidence of hazardous or solid waste disposal along any

portion of the project area. A comprehensive review of hazardous material sites databases was undertaken in 2011, and no records for any recognized environmental conditions were found for any portion of the project area.

3.10 Land Use

The project area is in a rural portion of Kern County. Land use is defined by current land activities, land ownership, zoning (where applicable), and land use designations in adopted land use plans and policies. Land use is also affected by legal guarantees or limitations on land use, such as those provided by easements, deeds, ROWs, claims, leases, licenses, and permits. Adjacent BLM-administered lands are not zoned, but they may be encumbered by easements, ROWs, mining claims, and permits. BLM lands in the project area are managed under the guidance contained in the California Desert Conservation Area (CDCA) Plan (BLM 1980), as amended (BLM 1999) in the West Mojave Plan (BLM 2006). The BLM land use designation for BLM-managed lands in the project area is Multiple-Use, Class L (Limited). According to the CDCA Plan, lands classified as Class L are intended to be managed in a manner that provides for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished.

There are a number of existing and proposed ROWs on the BLM lands in the project area, all of which are associated with transmission lines interconnecting with the Barren Ridge Switching Station within BLM-designated Energy Corridor 23-106. These include the Bonneville Power Administration's and LADWP's Pacific Direct Current Intertie 500-kV transmission line and LADWP's existing 230-kV Barren Ridge–Rinaldi Transmission Line. This ROW currently contains the two transmission lines and a service road, and is 250 feet in width. An adjacent 200-foot-wide ROW has been granted by the BLM to LADWP for the planned 230-kV BRRTP, and is scheduled for construction beginning in 2015.

Approved uses of private lands in unincorporated Kern County are outlined in Kern County's General Plan, and development within the county must be consistent with the General Plan. The project area is classified in the General Plan as "Resource Management" land (Kern County 2009), and are zoned as "A FP" (Combined Agriculture and Floodplain). These classifications and zoning allow for the construction of transmission facilities without a conditional use permit. The General Plan allows for solar power-generation facilities to be constructed and operated in these areas as well, but only with issuance of a conditional use permit. The Kern County Board of Supervisors issued such a permit for the project Applicant in 2011 for operation of the proposed solar facility.

Based on the proximity of Edwards Air Force Base, Kern County Zoning Ordinance Section 19.08.160 requires Department of Defense (DOD) review of structures taller than 100 feet and communication towers taller than 80 feet proposed within specified zones. The project area is within such a zone. The ordinance requires that DOD concur in writing that no impacts to the

military mission would occur. Such concurrence must be obtained prior to the construction of structures exceeding the specified heights.

3.11 Noise and Vibration

Sound is measured on a logarithmic scale consisting of sound pressure levels known as a decibel. The method for evaluating sound is to apply an A-weighting to reflect how the human ear responds to the different sound levels at different frequencies. Community noise levels are usually closely related to the intensity of nearby human activity. Noise levels are generally considered low when ambient levels are below 45 A-weighted decibels (dBA), moderate levels are in the 45 to 60 dBA range, and high levels are higher than 60 dBA. In small towns or lightly used residential areas, background noise is more likely to be in the 50 or 60 dBA range. Levels around 75 dBA are more common in busy urban areas, and levels up to 85 dBA occur near major freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential/commercial zones, these levels are, nevertheless, considered to be adverse to public health.

The project area is located in unincorporated southeastern Kern County, approximately 6.5 miles northwest of the community of California City, approximately 12 miles northeast of the community of Mojave, and approximately 0.8 mile south of the Los Angeles Aqueduct. The proposed solar facility site and gen-tie line would be constructed on undeveloped land and surrounded entirely by undeveloped land, with the exception of the gen-tie line's crossing of SR-14. Noise sources and levels are typical of open space and rural areas. The closest sensitive receptors to the project area are residences located approximately 2.2 miles to the east.

The predominant source of noise in the area is roadway traffic along SR-14, which is a moderately travelled State highway, with approximately 5,600 vehicles passing along the adjacent segment per day (Caltrans 2012). Several designated and non-designated OHV routes also traverse the area, but these routes are infrequently used and any noise generated during their use is ephemeral. Overall, the existing noise environment in the project area is limited.

3.12 Public Health and Safety

3.12.1 Hazardous Materials

The absence of known hazardous materials in the project area is discussed in Section 3.9. There are no hazardous materials or recognized environmental conditions identified on the private lands or BLM lands associated with the project.

3.12.2 Structural Height Limitations

Aboveground transmission lines can pose a threat to aviation safety if they are located within an airport land use plan or flight zone. The project area is not located within the airport compatibility zones associated with any of the public airports in Kern County. The closest public

airport is the California City Airport, which is located approximately 4.8 miles to the southeast of the project area.

As noted in Section 3.10, Kern County Zoning Ordinance Section 19.08.160 requires DOD review of structures taller than 100 feet and communication towers taller than 80 feet proposed within specified zones. The project area is within such a zone. The ordinance requires that DOD concur in writing that no impacts to the military mission would occur. This concurrence must be issued prior to the construction of structures exceeding the specified heights.

3.12.3 Valley Fever

Valley Fever is an infection caused by the fungus *Coccidioides*. The fungus lives in soil in the southwestern U.S. and parts of Mexico and Central and South America, and was recently found in south-central Washington State (Centers for Disease Control and Prevention 2014). The disease is contracted when people breathe in the microscopic fungal spores from the air. The fungal spores become airborne when soil is disturbed by wind or agricultural, construction, or other activities. The fungus usually infects the lungs, causing flu-like symptoms within 1 to 3 weeks; however, most people do not get sick from inhaling the spores. Certain groups are at higher risk for becoming ill (e.g., those with weakened immune systems, those who are pregnant, older adults). In those susceptible to the disease, infection usually occurs within a few weeks, and most people get over the illness on their own within weeks to months.

According to the Centers for Disease Control and Prevention, nearly 130,000 cases of Valley Fever were reported in the U.S. between 1998 and 2012. More than 17,000 cases were reported in the U.S. in 2012, of which more than 70% were in Arizona. In 2012, just less than 25% of the cases were reported in California. According to the California Department of Public Health, Kern County had an incidence rate of 217 cases per 100,000 people in 2012 (California Department of Public Health 2014). The greatest percentage of cases in California occurs in the San Joaquin Valley, from where more than 75% of California's cases are reported.

Any person who lives, works, or visits an area where Valley Fever may be present can become infected. People working in certain occupations such as construction or agriculture, and those who participate in recreational activities where soil is disturbed (e.g., OHV activities) have an increased risk of exposure and disease because these activities result in the disturbance of soils where fungal spores may be found. Valley Fever infection is highest in California from June to November. In addition, many domestic and native animals can become infected. It is estimated that approximately 60% of people infected with Valley Fever do not develop symptoms or will resist the infection naturally and, therefore, do not seek medical attention (California Department of Public Health 2013).

3.13 Recreation

The private lands project area is currently undeveloped and is not part of a designated recreational area or recreational facility. However, BLM lands that would be used by the Alternative 2 and 3 gen-tie lines are open to recreational purposes such as hiking, camping, OHV use (on designated routes), hunting, and shooting. Since the private lands that would be used for the solar facility and Alternative 4 gen-tie line alignment are not fenced or posted against trespass, these lands are also used for many of the same recreational uses. In addition, existing unimproved roadways on private lands are used by the public for access to adjoining public lands. The various routes that pass through the project area are discussed further in Section 3.17.

3.14 Socio-Economics and Environmental Justice

The project area is located in a rural portion of southeastern Kern County, approximately 6.5 miles northwest of the community of California City, approximately 12 miles northeast of the community of Mojave, and approximately 0.8 mile south of the Los Angeles Aqueduct. The project would be constructed on undeveloped land and surrounded entirely by undeveloped land. The closest residences are located approximately 2.2 miles to the east.

Executive Order 12898 requires all Federal agencies to analyze the effects of their decisions on human health and environmental conditions in minority and low-income communities and to develop strategies to address environmental justice. Agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

3.14.1 Population Characteristics

CEQ guidance (CEQ 1997) defines minority persons as “American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.” The guidance states that an area should be considered to contain a minority population when the minority population of the affected area exceeds 50%, or the percentage of the minority population in the affected area is meaningfully greater than the percentage in the general population.

General demographic information for the project area was obtained from U.S. Census data for 2010. The entirety of the project area is located within Kern County Census Tract 65. Tract 65 covers a large area, and is composed primarily of sparsely populated rural lands, but it also includes a portion of the unincorporated community of Mojave. Table 3.14-1 shows general population and race information for Tract 65, and also shows comparative information for Kern County and the State of California.

Table 3.14-1. Race and Ethnicity Data

Location	Total Population	White, Non-Hispanic	Hispanic	Black	American Indian	Asian	Pacific Islander	Two or More Races	Percent Minority
State of California	37,253,956	15,763,625	14,013,719	2,683,914	723,225	5,556,592	286,145	1,815,384	67.1%
		42.3%	37.6%	7.2%	1.9%	14.9%	0.7%	4.8%	
Kern County	839,631	499,766	413,033	48,921	12,676	34,846	1,252	37,856	65.3%
		59.5%	49.2%	5.8%	1.5%	4.2%	0.1%	4.5%	
Census Tract 65	5,152	4,424	3,042	109	57	115	6	164	41.9%
		85.9%	59.0%	2.1%	1.1%	2.2%	0.1%	3.2%	

Source: U.S. Census Bureau 2010

Note that the sums of racial percentages exceed 100% due to variations in individual self-identification.

Based on the Census data, 41.9% of the population of Census Tract 65 identifies itself as belonging to a racial minority. This is substantially less than the State of California and Kern County percentages of 67.1% and 65.3%, respectively. Further, the percentage of the population within Tract 65 that identifies itself as minority is less than 50%. Therefore, based on the CEQ guidance, the population in the region is not an environmental justice community based on race and ethnicity.

3.14.2 Income and Poverty

CEQ guidance states that low-income populations can be identified according to poverty thresholds published by the U.S. Census Bureau. In addition, the guidance notes that “in identifying low-income populations, agencies may consider as a community groups of individuals (such as migrant workers or Native Americans) where [such] group experiences common conditions of environmental exposure or effect.” Although the guidance does not specify quantitative criteria for what constitutes a low-income population, typically the percent of persons in poverty in a project area is compared to that in a larger area such as a county or state.

Table 3.14-2 shows 2012 U.S. Census estimated income, labor, and poverty information for Tract 65, and also shows comparative information for Kern County and the State of California.

Table 3.14-2. Labor, Income, and Poverty Data					
Location	Population Older than Age 16	Population In Labor Force	Civilian Unemployment Rate	Median Family Income (per year)	Families Below Poverty Level
State of California	29,163,075	64.5%	7.1%	\$61,400	11.5%
Kern County	614,650	59.4%	7.7%	\$47,727	18.5%
Census Tract 65	2,404	43.5%	11.9%	\$32,268	25.0%
Source: U.S. Census Bureau 2012					

Based on the data presented above, the percentage of families in Tract 65 living below the poverty level is substantially higher than that in the State of California and in Kern County. The percentage living in poverty in Tract 65 is more than twice that of the overall State of California average, and approximately 25% higher than the Kern County average. The rate of unemployment is also considerably higher in Tract 65. Therefore, the population of Tract 65 qualifies as an environmental justice community based on income and poverty levels as compared to the State of California and Kern County.

3.15 Topography, Geology, and Soils

3.15.1 Topography

The solar facility site and all of the alternative gen-tie line alignments would be located on a bajada slope that drops eastward from the base of Barren Ridge. The bajada is principally composed of alluvial material, with occasional outcroppings of quartz monzonite bedrock. The bajada slope is moderate, and ranges from 2% to 15%. The amount of elevation variation along the alternative gen-tie line alignments is less than 100 feet. All of the alternative gen-tie line alignments would roughly lie parallel to the mountain front, and would generally follow existing contours from the solar facility site up to the Barren Ridge Switching Station. An area of very low hills immediately south of Pine Tree Canyon Wash approximately midway along the alignment would be crossed by each of the alternative gen-tie line alignments. These hills rise approximately 80 feet from the surrounding landscape and then drop back down into Pine Tree Canyon Wash. The existing LADWP transmission lines and associated access road also cross over these hills.

3.15.2 Geology and Seismology

As with most of California, the project area is located in a seismically active area. The nearest recently active fault is the Garlock (West) fault, which runs along the base of Barren Ridge and is located within several hundred feet of the solar facility site. Other faults are also known within the region. Table 3.15-1 shows the estimated distance from the nearest expected surface expression of nearby faults.

Table 3.15-1. Fault Distance from Project Area		
Fault Name	Approximate Distance (miles)	Predicted Maximum Moment Magnitude
Garlock (West)	0.1	7.3
Garlock (East)	6.1	7.5
Lenwood, Lockhart, Old Woman Springs	17.3	7.5
White Wolf	26.6	7.3
Helendale, South Lockhart	33.5	7.3
Source: Stantec 2010		

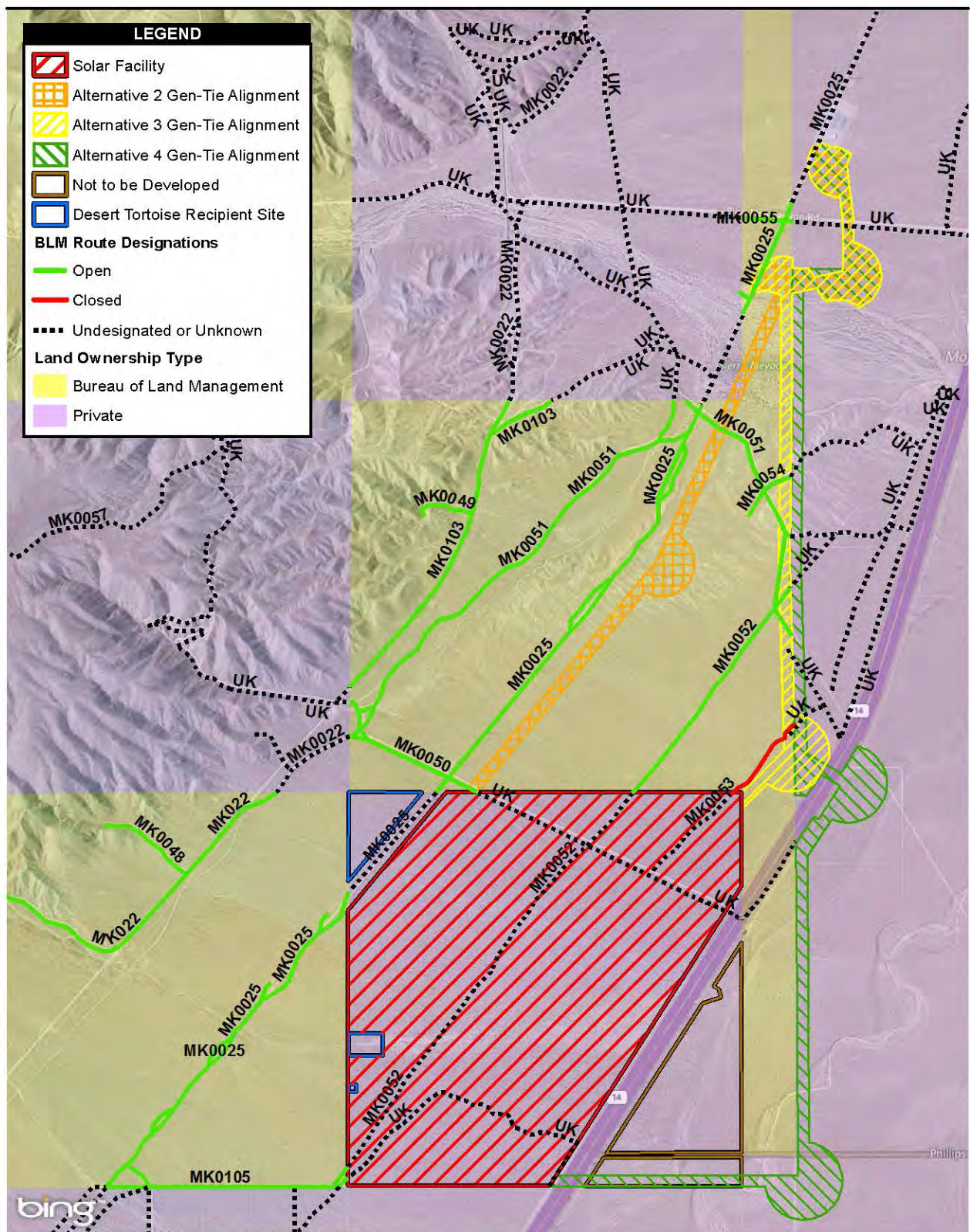
3.15.3 Soils

Based on Natural Resource Conservation Service data (NRCS 2014), soils in the area are predominantly Cajon loamy sand and Arizo gravelly loamy sand. The subsurface soils in the vicinity are composed of interbedded layers of well-graded sand with silt and sand with silt to a depth of approximately 4 feet below the ground surface. The near-surface sands are dry and generally fine to course in grain size and contain traces of gravel. These soils are generally well-drained and are moderately susceptible to water erosion, especially in areas of high slope.

3.16 Transportation and Public Access

The project area is currently accessible from a number of different routes. The southern portion of the solar facility site can be accessed directly from SR-14 at Phillips Road and at an unnamed entrance approximately 0.75 mile north of the Phillips Road intersection. Left-turn lanes for northbound traffic on SR-14 are provided at each of these intersections, and stop signs are located at each intersection for traffic accessing SR-14 from the project area. SR-14 is a four-lane highway with a divided median. The roadway is operated and maintained by Caltrans, and occupies a ROW that is approximately 400 feet in width. Traffic along the roadway is comparatively light considering the highway's high level of improvement. Approximately 5,600 vehicles per day pass along SR-14 in the project area (Caltrans 2012).

The northern portion of the project area can be accessed from Pine Tree Canyon Road, which is a graded dirt road that travels from SR-14 well up into Pine Tree Canyon to the west. Upon leaving SR-14, Pine Tree Canyon Road initially passes through private lands for approximately 2,700 feet, then passes through a brief section of BLM lands for approximately 700 feet before again entering private lands. Those portions of the route that pass through BLM lands are identified as Route MK0055 as part of BLM's West Mojave Plan Route Designation Program (BLM 2004: Map 30A). BLM-designated routes are signed with route markers throughout the project area. Figure 3.16-1 shows the locations and numbering of BLM-designated routes in the area.



Source: RE Cinco 2013, Copyright © 2014 Esri, DeLorme, HERE, TomTom
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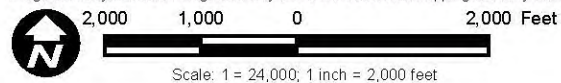


Figure 3.16-1
Existing Travel Routes

The alignment for the Alternative 2 gen-tie line would generally parallel an existing dirt access road associated with LADWP's existing transmission lines. This roadway serves as LADWP's service road for its transmission structures. The road and its associated transmission lines pass through the northwest corner of the private lands solar facility site and then travel in a northeastern direction for approximately 2 miles to the Barren Ridge Switching Station. The road extends much farther to the north and south of the project area, and generally parallels the aforementioned LADWP transmission lines for many miles in both directions. Owing to the checkerboard BLM and private land ownership patterns in this area, the roadway passes alternately through both private and BLM lands. Those portions of the route that pass through BLM lands are designated by the BLM as Route MK0025. Within the project area, the route is not gated at the private and BLM property boundaries, and is used by members of the public and LADWP transmission line maintenance crews. Besides maintenance activities, the route is used for recreational purposes and provides access to adjacent areas along the Barren Ridge mountain front and adjoining ranges to the north and south.

The alignment for the Alternative 3 gen-tie line would exit the private lands solar facility site at its northeastern corner and would travel north to the Barren Ridge Switching Station. The route would not traverse any existing roadways, but the alignment would cross several existing routes. The checkerboard BLM and private land ownership in this area means that each of these routes passes through both private and BLM-managed lands. Portions that pass through BLM-managed lands are designated with route numbers. From south to north, these routes are MK0053, MK0052, MK0051, MK0054, MK0025, and MK0055 (Pine Tree Canyon Road). See Figure 3.16-1 for the locations of these routes. Each of the routes is being used by the public, and none of the routes are gated where they enter and leave private lands.

The Alternative 4 gen-tie line alignment would exit the private lands solar facility site at its southeastern corner and would then cross over SR-14 and then turn northward over Phillips Road. It would then cross SR-14 again and continue northward across private lands to the Barren Ridge Switching Station. Since the alignment for Alternative 4 would pass exclusively through private lands, it would not traverse any BLM-designated routes on BLM lands. As with the Alternative 3 alignment, some of the routes that would be crossed are designated as BLM routes. From south to north, these routes are MK0053, MK0051, MK0052, MK0054, MK0025, and MK0055 (Pine Tree Canyon Road). Private lands portions of these routes are not gated or blocked where they join BLM-designated routes, so the public is able to use the private lands portions of these routes as well, unless otherwise posted by the private property owner.

3.17 Visual Resources

Visual Resources Technical Reports were prepared for both the solar facility site (AECOM 2014h) and the alternative gen-tie line alignments (AECOM 2014i). The reports are included with this EA in Appendices G and H, respectively.

3.17.1 Solar Facility Site Visual Resources

Existing Conditions Methodology (Solar Facility Site)

Visual resources were evaluated for the solar facility site comprising the area's viewshed, or the area from which the project could be visible. The highest visibility occurs around the SR-14 corridor, beginning 2 miles south of Phillips Road if traveling in a northbound direction, ending approximately 1 mile north of Pine Tree Canyon Road, and extending approximately 1.5 miles to either side of the SR-14 centerline. The methodology used to establish landscape scenery and the sensitive viewers inventory involved manual-digitizing from detailed aerials, downloading data from USGS, conducting a geographic information systems (GIS) spatial analyses, and field verification. Land surface modeling was used to delineate viewsheds and identify sensitive viewer locations, including residences, recreation sites, trails, and roads. Project-specific visibility and distance zone analyses and mapping were conducted in GIS (ArcGIS) and are depicted in Figure 2 of the Visual Resources Technical Report prepared for the solar facility site, in Appendix G of this EA.

Field investigation was also conducted to discover and disclose the relationships of project elements with existing on-site landscape characteristics and experiences of sensitive viewers. To better understand these conditions and potential viewer response, key observation points (KOPs) were selected based on a composite evaluation of project and corridor viewshed analyses. Because it was not feasible to analyze all views of the project area, four KOPs were selected for their ability to simultaneously represent existing conditions and authentically depict the effects of project implementation.

These KOPs established a baseline visual condition to which potential change was compared. The chosen KOP locations are identified in Figures 3 through 9 of Appendix G and described below.

KOP 1 is located along the northbound lanes of SR-14, approximately 325 feet south of Phillips Road. The view from this location is characterized by immediate foreground and foreground-middleground views of existing modifications, including SR-14 and LADWP transmission lines, and existing undeveloped desert landscape. Viewers have unobstructed background views of the mountain range to the west and the scrub-covered alluvial landform below. KOP 1 represents a view typical of those along SR-14 north of the community of Mojave, and possesses few unique or memorable visual elements beyond the existing LADWP transmission lines. Viewers traveling north on SR-14 toward this KOP from Mojave and California City experience middleground-background views of the existing Alta Wind Energy Center project within 6 miles south of this KOP.

KOP 2 is located within an existing LADPW ROW along a BLM-designated travel route approximately 0.61 mile north of the Phillips Road/SR-14 intersection and approximately 0.79 mile west of SR-14. This KOP is roughly 20 feet from the existing LADWP transmission line

alignment. From this elevated position, unobstructed immediate foreground and foreground-middleground views of the existing LADWP transmission lines and the proposed solar facility area are visible. KOP 2 also affords unobstructed background views of the surrounding desert landscape, including views to Castle Butte and Desert Butte (east and south of California City, respectively), and is largely typical of views in this region of the desert.

KOP 2A is located and characterized as described above under KOP 2, and has been included to depict the viewshed north-northeast from KOP 2.

KOP 3 is located along the northbound lanes of SR-14, approximately 0.76 mile north of Phillips Road. Views facing north along this corridor are long and unobstructed, providing immediate foreground and foreground-middleground views of existing modifications, including SR-14 and existing LADWP transmission lines, and natural landscape features, including tall mountain peaks to the west and more uniform scrub-covered alluvial landforms moving east. Background views of the surrounding mountain range provide viewers a sense of topographical enclosure. The view represented by KOP 3 is typical of the experience traveling along SR-14: visually repetitious and possessing few unique or memorable visual elements.

KOP 4 is located along the southbound lanes of SR-14, approximately 1.5 miles south of Pine Tree Canyon Road. Views facing south along this corridor are long and unobstructed, providing immediate foreground and foreground-middleground views of existing modifications, including SR 14 and existing LADWP transmission lines, and natural landscape features, including tall mountain peaks to the west. Background views of the surrounding valley to the east provide viewers a sense of desert expanse. KOP 4 represents a view typical of those along SR-14 north of Mojave, and possesses few unique or memorable visual elements beyond foreground-middleground view of the existing LADWP transmission lines and background views of Soledad Mountain (approximately 18 miles south) of this location. Viewers traveling south on SR-14 from this KOP would experience middleground-background views of the existing Alta Wind Energy Center project within approximately 3 miles of this point.

KOP 5 is located on Pine Tree Canyon Road, approximately 0.61 mile west of the existing LADPW Barren Ridge Switching Station and the existing LADWP transmission lines. The view represented by KOP 5 is typical of the visual experience in the region, and possesses few unique or memorable visual elements beyond those contributed by the Barren Ridge Switching Station and the existing transmission lines.

Existing Visual Setting (Solar Facility Site)

The visual texture of the project area is moderately coarse with varying vegetation densities, including smooth patches (formed by breaks in the vegetation and exposed soils). Colors in this landscape tend to be muted, with tans, grays, and greens dominating the existing palette.

Although generally covered by high-desert vegetation, the undulating topography throughout the

project area and valley at large is occasionally interrupted by a denuded wash or existing access road, providing texture and naturally occurring visual contrast in the landscape.

Seasonal warmth and color contrasts provided by reds and oranges influence the visual experience at varying times of year, but most frequently, large expanses of undeveloped, vegetated open space allow those areas remaining unvegetated to stand in strong contrast to the surroundings.

Beyond the scenic landscape, several cultural modifications encroach on the project area, most notably SR-14, the existing LADWP transmission line corridor, the Barren Ridge Switching Station, and clustered residential developments in the far distance. Both recent and historically cleared ROWs, fencelines, and improved drainage structures add to the visual evidence of human-made interventions on the land, and all provide moderate to strong sources of existing visual contrast in the landscape.

BLM Visual Resources Inventory (Solar Facility Site)

Scenic quality is defined by the BLM as the visual appeal of a tract of land (BLM 1986a). Lands are rated Class A, Class B, or Class C for highest to lowest scenic quality. View distance, vegetation, topographic slopes, and characteristic landscape (particularly, the presence or absence of existing cultural modifications) play important roles in the assessment of change that would be caused by the solar facility project on landscape scenery.

As noted in Section 4.0 of Appendix G, to preserve continuity, approved Interim BLM Visual Resource Management (VRM) Classifications from the BRRTP Visual Resources Technical Report were adopted for this EA (Power Engineers 2011) after field verification. The surrounding scenic quality was classified as BLM Class C scenic quality, or a “common area where characteristic features have little variation in form, line color, or texture in relation to the surrounding region” (BLM 1986a), and would apply equally to the entirety of the solar facility’s private land project area.

Viewer Sensitivity Levels (Solar Facility Site)

Sensitive viewers analysis and mapping for the project area encompasses public and private viewers’ concerns for landscape scenery. Sensitivity levels are defined as the measure of public concern for scenic quality. Public and private lands are assigned high, medium, or low sensitivity levels (BLM 1986a). As detailed in Appendix G, viewer sensitivity for vehicular viewers along SR-14 would be high, and viewer sensitivity for recreational viewers would be moderate due to level of user concern, duration of views, and overall volumes of viewers.

Distance Zones (Solar Facility Site)

Distance zones are defined as relative visibility from travel routes or observation points, and were determined by evaluating the viewsheds of nearby travel routes and vistas in the project vicinity, including the following:

- SR-14
- Pine Tree Canyon Road
- BLM OHV recreational trails/LADWP transmission line ROW

Given the nature of the project area and the concentration of highly sensitive viewers along travel routes, analysis of effects to visual resources was focused primarily on the immediate foreground (0 to 0.5 mile) and the foreground to middleground (0.5 mile to 2.5 miles) zones.

Visual Resource Inventory Classes (Solar Facility Site)

Visual Resource Inventory (VRI) classes represent the relative value of the visual resources and provide the basis for considering visual values in the resource management process. VRI Classes II, III, and IV are determined based on a combination of scenic quality, sensitivity level, and distance-zone overlays. Based on these factors, the project area was determined, on an interim basis, to be consistent with that of a BLM Class III landscape. The goal for private lands equivalent to this class is “to partially retain the existing character of the landscape. Changes to the landscape character may begin to attract attention but should not dominate the visual setting” (BLM 1986a).

3.17.2 Alternative Gen-Tie Line Alignments Visual Resources

Existing Conditions Methodology (Alternative Gen-Tie Alignments)

Visual resources were evaluated for the alternative gen-tie line comprising the area’s viewshed, or the areas from which the alignments could be visible. The methodology used was identical to that described previously in Section 3.17.1 for the solar facility site. KOPs were selected based on likely public viewpoints in and around the project area. Because it was not feasible to analyze all views of the project area, three KOPs were selected for their ability to simultaneously represent existing conditions and authentically depict the effects of implementation. These views established a baseline visual condition to which potential change was compared. The chosen KOP locations are identified in Figure 3 of the Visual Resources Technical Report prepared for the gen-tie line alignments, in Appendix H of this EA. The KOPs are also described below and are depicted in Figures 5 through 8 of Appendix H.

KOP 1 is located within an existing LADWP ROW, along a BLM-designated OHV trail approximately 0.61 mile north of the Phillips Road/SR-14 intersection and approximately 0.79 mile west of SR-14. The KOP is roughly 0.25 mile west of the Alternative 2 gen-tie line

alignment, and 20 feet from the BRRTP alignment. From this elevated position, unobstructed immediate foreground and foreground-middleground views of the existing BRRTP and project area are visible. KOP 1 also affords unobstructed background views of the surrounding desert landscape, and is typical of views in this region of the desert.

KOP 2 is located along the northbound lanes of SR-14, approximately 0.76 mile north of Phillips Road. The view from this location is characterized by immediate foreground and foreground-middleground views of existing cultural modifications, including SR-14, the BRRTP, and cleared ROWs, as well as the existing undeveloped desert landscape. Viewers have unobstructed background views of the mountain range to the west and the scrub-covered alluvial landform below. The view represented by KOP 2 is typical of those in this desert region, and possesses few unique or memorable visual elements.

KOP 2A is located along the northbound lanes of SR-14, approximately 0.76 mile north of Phillips Road. Views facing north along this corridor are long and unobstructed, providing immediate foreground and foreground-middleground views of existing cultural modifications, including SR-14, the BRRTP, and cleared ROW, and natural landscape features (tall mountain peaks to the west and more uniform scrub-covered alluvial landform moving east). Background views of the surrounding mountain range provide viewers a sense of topographical enclosure. The view represented by KOP 2A is typical of the experience traveling along SR-14: visually repetitious and possessing few unique or memorable visual elements.

KOP 3 is located on Pine Tree Canyon Road, approximately 0.61 mile south of the existing LADWP Barren Ridge Switching Station and BRRTP. The KOP is roughly the same distance from the northern terminus of the project area, directly aligned with the proposed crossings of Pine Tree Canyon Road and Pine Tree Wash. The view represented by KOP 3 is typical of the visual experience in the region, and possesses few unique or memorable visual elements beyond those contributed by the BRRTP or Barren Ridge Switching Station.

Existing Visual Setting (Alternative Gen-Tie Alignments)

The visual setting is framed by the silhouette of pyramidal ridgelines appearing distinctly against the sky and rolling topography of the adjacent, scrub-covered transitional slopes. The visual texture of the project area is moderately coarse, with varying vegetation densities, including smooth patches (formed by breaks in the vegetation and exposed soils). Colors in this landscape tend to be muted, with tans, grays, and greens dominating the existing palette.

Although generally covered by high desert vegetation, the undulating topography throughout the project area and valley at large is occasionally interrupted by a denuded wash or existing access road, which provides texture and naturally occurring visual contrast in the landscape. Seasonal warmth and color contrasts provided by reds and oranges influence this visual experience at

varying times of year, but most frequently, large expanses of undeveloped, vegetated open space allow those areas remaining unvegetated to stand in strong contrast against the surroundings.

Beyond the scenic landscape, several cultural modifications encroach on the project area, most notably SR-14, the existing Barren Ridge transmission corridor, and the LADWP Barren Ridge Switching Station. Both recent and historically cleared ROWs add to the visual evidence of human-made interventions on the land, and all provide moderate to strong sources of existing visual contrast in the landscape.

BLM Visual Resources Inventory (Alternative Gen-Tie Alignments)

Landscape scenery for the project area portrays the aesthetic value of landscapes on BLM, private, and State lands. Scenic quality is defined by the BLM as the visual appeal of a tract of land. BLM lands are rated Class A, Class B, or Class C for highest to lowest scenic quality. View distance, vegetation, topographic slopes, and characteristic landscape (particularly, the presence or absence of existing cultural modifications), play important roles in the assessment of change caused by the project on landscape scenery.

As noted in Section 4.0 of Appendix H, to preserve continuity, approved Interim BLM VRM Classifications from the BRRTP Visual Resources Technical Report were adopted by this document (Power Engineers 2011) after field verification. The surrounding scenic quality was classified as BLM Class C scenic quality, or a “common area where characteristic features have little variation in form, line color, or texture in relation to the surrounding region” (BLM 1986a); this classification applies to the entirety of the project area.

Viewer Sensitivity Levels (Alternative Gen-Tie Alignments)

Sensitive viewer analysis and mapping for the project area encompassed public and private viewer concerns for landscape scenery. Sensitivity levels are defined by the BLM as the measure of public concern for scenic quality. Public lands are assigned high, medium, or low sensitivity levels (BLM 1986a). As detailed in Appendix H, viewer sensitivity for vehicular viewers along SR-14 would be high; viewer sensitivity for recreational viewers would be moderate due to level of user concern, duration of views, and overall volumes of viewers.

Distance Zones (Alternative Gen-Tie Alignments)

Distance zones are defined by the BLM as relative visibility from travel routes or observation points, and were determined by evaluating the viewsheds of nearby travel routes and vistas in the project vicinity, including the following:

- SR-14
- Pine Tree Canyon Road

- BLM OHV recreational trails/LADWP ROW

Given the nature of the project area and the concentration of highly sensitive viewers along travel routes, analysis of effects to visual resources was focused primarily on immediate the foreground (0 to 0.5 mile) and foreground-middleground (0.5 to 2.5 mile).

Visual Resource Inventory Classes (Alternative Gen-Tie Alignments)

VRI classes represent the relative value of the visual resources and provide the basis for considering visual values in the resource management planning process. VRI Classes II, III, and IV are determined based on a combination of scenic quality, sensitivity level, and distance-zone overlays. Based on these factors, the project area was determined, on an interim basis, to be consistent with that of a BLM Class III landscape. As such, the anticipated BLM VRM management objective of this class would be “to partially retain the existing character of the landscape. Changes to the landscape character may begin to attract attention, but should not dominate the visual setting” (BLM 1986a).

3.18 Water Resources

3.18.1 Surface Water Resources

The project area is located within the Antelope Valley Hydrologic Unit (HU) in the southwestern corner of the South Lahontan Hydrologic Region. The Antelope Valley HU covers approximately 1.5 million acres (2,400 square miles) in the southwestern part of the Mojave Desert. The Antelope Valley HU is mostly located in Los Angeles County and Kern County, with a small part in San Bernardino County. Bounded by the San Gabriel Mountains to the south and southwest, the Tehachapi Mountains to the northwest, and a series of hills and buttes that generally follow the San Bernardino County line to the east, the Antelope Valley HU forms a well-defined triangular point at its western edge.

The Antelope Valley HU is geographically a closed and internally drained basin with no outlets for surface runoff. Numerous streams originating in the mountains and foothills either infiltrate into the groundwater basin, evaporate, or flow across the valley floor to eventually pond in the dry lakes within Edwards Air Force Base. The valley lacks defined natural and improved channels outside of the foothills and is subject to unpredictable sheet flow patterns. Due to the relatively impervious nature of the dry lake soil and high evaporation rates, water that collects on the dry lakes eventually evaporates rather than infiltrating into the groundwater.

The project area is located on a broad alluvial fan protruding east from the base of a ridge known as “Barren Ridge.” The proposed solar facility site is located on a portion of this alluvial fan that is west of SR-14. In this portion of the alluvial fan, slope decreases and channelized flows give way to radiating flow patterns, sheet flows, and active sediment deposition (AECOM 2011b). Primary measurable alluvial fan characteristics evident on and around the solar facility site include overall deposition patterns, debris flows, radiating channel patterns changing to sheet

flow areas, and discontinuous and/or abandoned channels due to active processes of stream capture and avulsion.

Infrequent surface flows that reach SR-14 are captured by a shallow channel that parallels SR-14 along its western side. The channel conveys the flows in a southerly direction to a series of reinforced concrete box culverts that pass beneath the highway.

3.18.2 Ground Water Resources

The project area is located within the Fremont Valley Groundwater Basin, which underlies Fremont Valley in eastern Kern County and northwestern San Bernardino County. The basin is bounded on the northwest by the Garlock Fault zone against impermeable crystalline rocks of the El Paso Mountains and the Sierra Nevada. The basin is bounded on the east by crystalline rocks of the Summit Range, Red Mountain, Lava Mountains, Rand Mountains, Castle Butte, Bissel Hills, and Rosamond Hills. The basin is bounded on the southwest by the Antelope Valley Groundwater Basin along a groundwater divide approximated by a line connecting the mouth of Oak Creek through Middle Butte to exposed basement rock near Gem Hill (DWR 2004).

3.18.3 Jurisdictional Waters, Wetlands, and Riparian Zones

The project area generally drains into Pine Tree Canyon Wash. The drainage to the wash occurs as flow within independent natural drainage features, as sheet flow, or through constructed drainage channels and culverts such as those present adjacent to and beneath SR-14.

Pine Tree Canyon Wash eventually dissipates into the landscape prior to reaching Koehn Lake (an isolated playa lake), and does not connect with other surface aquatic features. Therefore, the desert aquatic features are considered “geographically isolated” aquatic features, and are, thus, considered non-jurisdictional waters of the U.S. by the U.S. Army Corps of Engineers (USACE). A Jurisdictional Determination confirming this non-jurisdictional status was provided by USACE (see Appendix F). USACE determined that Pine Tree Canyon Wash and other features that create a confluence with it present “geographic isolation” (e.g., isolated, non-jurisdictional waters of the U.S.). However, these desert aquatic features would still be considered jurisdictional waters of the State under the regulatory administration of CDFW and the Regional Water Quality Control Board.

3.18.4 Floodplains

The only portion of the project area that is located within a designated floodplain is that portion of the gen-tie line alignment that would cross Pine Tree Canyon Wash. According to the most recent Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (Map No. 06029C2925E), Pine Tree Canyon Wash is a FEMA-designated Flood Zone “A,” indicating that this portion of the project area has a 1% annual chance of flooding. The remainder of the project area, including the solar facility site, is located within a moderate flood hazard area, labeled Zone

X, also shown on the Flood Insurance Rate Map. Areas designated as Zone X lie between the limits of the base flood and the 0.2% annual chance (or 500-year) flood (FEMA 2008).

3.18.5 Water Quality and Quantity

Natural recharge of the groundwater basin in which the project area is located includes percolation of ephemeral streams that flow from the Sierra Nevada. The general groundwater flow direction is toward Koehn Lake at the center of the Fremont Valley. According to the California Department of Water Resources (DWR), there is no appreciable quantity of groundwater flowing out of the basin (DWR 2004). The total storage capacity of the basin has been calculated to be 4,800,000 acre-feet.

Groundwater in the basin is sodium bicarbonate character in the southeastern part of the basin, and sodium bicarbonate or calcium-sodium sulfate character in the southwest part of the basin. Groundwater is sodium sulfate-bicarbonate to sodium chloride character in the northern part of the basin. Groundwater character in the central portion of the basin is a complex with variable mixtures of sodium, calcium, chloride, sulfate, and bicarbonate (DWR 2004).

3.19 Cumulative Projects

The projects identified in Table 3.19-1 are located near the project area and are under the jurisdiction of the BLM or a local government entity such as Kern County. If implemented, these projects could result in impacts that could contribute cumulatively to impacts in the area. This list was generated through consultation with Kern County and the BLM, and represents those projects that have recently occurred or have the potential to occur within 20 miles of the project area.

Table 3.19-1. Cumulative Projects			
Project Name	Description of Project	Location	Jurisdiction
Alta-Oak Creek Mojave Wind Project	800-megawatt (MW) wind turbine project on 9,175 acres	18 miles southwest of project area	Kern County, BLM
Alta East Wind Project	300-MW wind project on 3,660 acres	9 miles southwest of project area	Kern County, BLM
Beacon Solar Energy project	250-MW concentrated solar project on 2,012 acres	3 miles northeast of project area	Kern County
Clear Vista Wind Project	40-MW wind turbine project on 226 acres	17 miles southwest of project area	Kern County
LADWP Barren Ridge Transmission Project	61-mile transmission line extension and reconductoring of other existing segments; expansion of switching stations	Immediately adjacent to project area	BLM, U.S. Forest Service, LADWP
Monte Vista Solar Array	126-MW photovoltaic solar facility on 1,040 acres	13 miles south of project area	Kern County
Pine Tree Solar Project	10-MW photovoltaic solar facility on 75 acres	6 miles northwest of project area	Kern County
North Sky River Wind Project	326-MW wind turbine project on 1,330 acres	6 miles northwest of project area	Kern County
RE Distributed Solar Project	221-MW photovoltaic solar on 1,709 acres	15 miles south of project area	Kern County
Ridge Rider Solar Park	38-MW photovoltaic solar project on 475 acres	3 miles northeast of project area	Kern County
Rising Tree Wind Project	234-MW wind project on 2,745 acres	11 miles southwest of project area	Kern County, BLM
Sand Canyon Wind Project	40-MW wind project on 300 acres	14 miles southwest of project area	Kern County
Windstar Wind Project	65-MW wind turbine project on 1,007 acres	14 miles southwest of project area	Kern County

BLM = Bureau of Land Management

LADWP = Los Angeles Department of Water and Power

4. ENVIRONMENTAL CONSEQUENCES

Implementation of any of the alternatives described in Chapter 2 could result in direct, indirect, or cumulative effects on the physical, biological, or social components of the human environment. This chapter analyzes the anticipated environmental consequences (effects) that could occur as a result of implementing the alternatives. Implementation includes construction, O&M, and decommissioning of the project. Plans for decommissioning would be prepared and submitted for approval to USFWS at the end of the project's operational life, which is anticipated to be approximately 30 years.

Effects may be direct, indirect, or cumulative. Direct effects are those that are caused by the action and occur at the same time and place as the action. Indirect effects are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable (40 CFR 1508.8). In this EA, the effects that remain after mitigation are referred to as "residual effects." Cumulative effects are those that result from the impact of the action when added to other past, present, and reasonably foreseeable future actions (40 CFR 1508.7).

This chapter evaluates the environmental effects that would result from implementation of each of the four alternatives, which are described in detail in Chapter 2 and are summarized below.

Alternative 1 – No Action Alternative. USFWS would take no action on the Applicant's request for approval of the HCP and issuance of an ITP, and the project would not be constructed unless the Applicant can develop an effective strategy to fully avoid take of desert tortoise.

Alternative 2 – Private Lands Solar Facility Development, Issuance of Incidental Take Permit for Solar Facility Site, and Gen-Tie on Combination of Federal and Private Lands (Preferred Alternative). USFWS would approve the HCP and would issue an ITP for the solar facility project. Gen-tie line connection between the solar facility and the Barren Ridge Switching Station would be facilitated via an alignment across Federal (BLM) lands. For the Federal lands portion of the gen-tie line alignment, Section 7(a)(2) ESA consultation with USFWS would be initiated by the BLM, and coverage for take of desert tortoise would be part of BLM's own NEPA process and approval action for the ROW grant. The solar facility and a gen-tie line would be constructed and become operational.

Alternative 3 – Private Lands Solar Facility Development, Issuance of Incidental Take Permit for Solar Facility Site, and Gen-Tie on Combination of Federal and Private Lands (Alternative Federal Lands Alignment). USFWS would approve the HCP and would issue an ITP for the solar facility project. Gen-tie line connection between the solar facility and the Barren Ridge Switching Station would be facilitated via an alternative alignment across Federal (BLM) lands. For the Federal lands portion of the gen-tie line alignment, Section 7(a)(2) ESA consultation with USFWS would be initiated by the BLM, and coverage for take of desert

tortoise would be a part of BLM's own NEPA process and approval action for the ROW grant. The solar facility and a gen-tie line would be constructed and become operational.

Alternative 4 – Solar Facility Site and Private Lands Gen-Tie. USFWS would approve the HCP and issue an ITP for both the solar facility and a private lands gen-tie line. The solar facility and the private lands gen-tie line would be constructed and become operational.

Alternatives 2, 3, and 4 are considered the action alternatives, since any one of the three would result in direct effects to the environment. As noted in Chapter 3, the affected environment for each of the action alternatives is generally the same for each of the resource areas described below. Accordingly, the environmental consequences of implementing any of the action alternatives would be similar. Therefore, unless otherwise stated, the environmental consequences discussions below are applicable to all of the action alternatives. Any variations between the effects of each alternative are presented in the text.

4.1 Air Resources

Under Clean Air Act regulations in Title 40 CFR, Part 93 and the provisions of CFR, Title 40, Chapter I, Subchapter C, Part 51, Subpart W, Federal agencies are required to demonstrate that Federal actions conform with the applicable State Implementation Plan. Provisions of CFR, Title 40, Chapter I, Subchapter C, Parts 6 and 51 in effect October 13, 1994, were adopted by the EKAPCD.

The USEPA general conformity rule applies to Federal actions occurring in nonattainment or maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their precursors) exceed specified thresholds. The emissions thresholds that trigger requirements of the conformity rule are called *de minimis* levels. Table 4.1-1 identifies the *de minimis* emissions thresholds for nonattainment areas.

Table 4.1-1. De Minimis Levels (tons per year)						
Carbon Monoxide (CO)	Nitrogen Oxides (NO _x)	Volatile Organic Compounds (VOC)	Nitrogen Dioxide (NO ₂)	Particulate Matter <10 microns (PM ₁₀)	Particulate Matter <2.5 microns (PM _{2.5})	Sulfur Dioxide (SO ₂)
100	100	100	100	100	100	100
Source: 40 CFR 93.153.(b)(1)						

4.1.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP, and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County

General Plan and other applicable regulations. These lands are classified in the General Plan as “Resource Management” lands, and are zoned as “A FP” (Agriculture-Floodplain Combining) (Kern County 2009). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation facilities, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.1.2 Alternatives 2, 3, and 4

Under Alternatives 2 and 3, the solar facility and a Federal lands gen-tie line would be constructed and operated, and under Alternative 4 the solar facility and a private lands gen-tie line would be constructed. The effects of implementing these alternatives would be similar. Therefore, the analysis of effects is considered to be generally the same for each alternative.

Direct and Indirect Impacts

The Draft EIR prepared for the RE Distributed Solar Project analyzed air quality impacts of the construction and operation of the solar facility and a 1.9-mile gen-tie line (Kern County Planning and Community Development Department 2011a). The Air Quality and Greenhouse Gases Technical Report, prepared by Rincon Consultants in March 2011, forms the basis of the air quality analysis of the Draft EIR. As described in the Air Quality and Greenhouse Gases Technical Report, the construction and operational emissions were estimated from several emissions models and associated spreadsheet calculations, depending on the source type and data availability. The California Air Resources Board’s on-road vehicle emissions factor model (EMFAC2007) and California Air Resources Board’s off-road vehicle emissions factor model (OFFROAD2007) were used, along with emissions factors obtained from the USEPA AP42 Compilation of Air Pollutant Emissions Factors. Short-term and annual project emissions were estimated using appropriate emissions factors and the associated schedules.

Construction of the solar facility and a gen-tie line would occur over an approximately 9-month period. Construction activities would generally occur over a standard 5-day work week, with

activity limited to daytime hours. Construction would progress within discrete portions of the project area, so only a few acres would be actively disturbed at any one time during construction. As a result, limited quantities of construction equipment would be operating at the same time and in the same location.

The Air Quality and Greenhouse Gases Technical Report calculated estimated emissions that would be generated during construction of the solar facility and an associated gen-tie line. Table 4.1-2 shows the estimated emissions to be generated during Phase 1 of construction and compares them with the *de minimis* emissions thresholds.

Table 4.1-2. Total Construction Emissions						
Emissions	Emissions (tons per year)					
	Carbon Monoxide (CO)	Nitrogen Oxides (NO_x)	Volatile Organic Compounds (VOC)	Particulate Matter <10 microns (PM₁₀)	Particulate Matter <2.5 microns (PM_{2.5})	Sulfur Dioxide (SO₂)
Unmitigated Emissions	17.4	22.2	3.4	45.2	6.5	0.0
De Minimis Level	100	100	100	100	100	100
Exceeds Threshold?	No	No	No	No	No	No

Based on the emissions thresholds shown above, construction emissions are expected to be far below established *de minimis* levels. These results would be applicable to each of the action alternatives. Further, the Applicant would implement a number of standard emissions control actions during construction, as required by Kern County. These include the application of a dust palliative to further reduce PM₁₀ emissions, which would reduce construction emissions even further.

O&M of the project would result in lower emissions than project construction, since there would be no stationary emissions sources, and O&M would only involve periodic maintenance and worker activities. Although emissions are expected for implementation Alternatives 2, 3, or 4, they would be well below the *de minimis* levels.

4.2 Biological Resources – Vegetation

4.2.1 Alternative 1 (No Action Alternative)

Direct and Indirect Impacts

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan and other applicable regulations. These lands are classified in the General Plan as “Resource Management” lands, and are zoned as “A FP” (Agriculture-Floodplain Combining) (Kern County 2009). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation facilities, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these or other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.2.2 Alternative 2 (Solar Facility and Federal Lands Gen-Tie Alignment)

Direct and Indirect Impacts

Solar Facility Site

Construction of the solar facility would result in direct and indirect impacts to vegetation communities. Construction of the solar facility would require vegetation clearing and grading of up to approximately 500 acres. Impacts resulting from solar facility construction are considered long term because impacts would span at least the life of the proposed solar facility. The majority of impacts would occur to creosote bush-white bursage scrub, given that this is the most prevalent community in the relatively homogeneous solar facility site (see Figure 3.3-1). The Applicant is proposing to avoid impacts to unvegetated ephemeral dry wash and southern alluvial fan scrub habitats to the maximum extent feasible. However, up to 5.23 acres of ephemeral wash habitat could be disturbed by construction activities.

Covered activities associated with constructing, operating, and decommissioning the solar facility would have the potential to introduce nonnative plant species and create airborne dust, sedimentation, and erosion, thereby degrading vegetation communities in the project area. Seeds of nonnative plant species may be introduced to the project area from outside sources on vehicles, people, and equipment. Ground disturbance associated with covered activities could promote the establishment and spread of opportunistic nonnative plants introduced to the project

area. Additionally, wildfires caused by construction and operation of solar facilities are rare, but may occur, and nonnative plant species often frequent recently burned areas. The potential spread of nonnative species into the surrounding vegetation communities would be considered a permanent indirect impact.

Airborne dust could result from grading, vehicle travel on dirt access roads, and other ground-disturbing activities. Airborne dust could affect plants by reducing the rates of metabolic processes such as photosynthesis and respiration. Grading and vegetation clearing associated with construction of the solar facility could also result in increased erosion and sedimentation in the project area. Impacts from dust, sedimentation, and erosion would be considered a temporary indirect impact.

Potential direct and indirect impacts to vegetation communities would be avoided and minimized through implementation of the general measures identified in Table 4.2-1. Long-term impacts to vegetation communities do not require compensatory mitigation; however, in accordance with ITP conditions under the ESA and/or CESA, compensatory mitigation will occur for impacts to vegetation communities that provide suitable habitat for federally and State-listed species (i.e., desert tortoise and Mohave ground squirrel).

Table 4.2-1. General Avoidance and Minimization Measures for Biological Resources Applicable to Solar Facility		
Measure Acronym¹	Measure Description	Timing
GM-1	The construction contractor(s)/crew(s) will be educated about the biological constraints of the project by an Authorized Biologist (AB) or Biological Monitors (BMs) under the direction of an AB. All project personnel working in the project area will attend a Worker Environmental Awareness Program (WEAP), developed and presented by a project biologist prior to the commencement of construction activity. Logs of personnel who have taken the training will be kept on-site at the construction office.	Pre-construction
GM-3	New roads planned for construction will not extend beyond the planned impact area that will be flagged prior to construction. All vehicles passing or turning around will do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route will be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.	Pre-construction, construction, decommissioning
GM-4	Spoils (i.e., excavated material such as topsoil and rock) will be stockpiled in disturbed areas presently lacking native vegetation. Stockpile areas will be marked to define the limits of where stockpiling can occur.	Pre-construction, construction, operations and maintenance (O&M), decommissioning
GM-5	Erosion and sediment control best management practices (BMPs) will be employed to minimize impacts during construction, O&M, and decommissioning.	Construction, O&M, decommissioning
GM-6	Fueling of equipment during all phases of the project will take place within the solar facility. Equipment will be checked for leaks prior to operation and repaired as necessary. Spill kits will be available at the solar facility to respond to potential and actual spills in accordance with the Storm Water Pollution Prevention Plan BMPs.	Pre-construction, construction, O&M, decommissioning

Table 4.2-1. General Avoidance and Minimization Measures for Biological Resources Applicable to Solar Facility		
Measure Acronym¹	Measure Description	Timing
GM-7	Construction activities and ground-disturbing operations and maintenance activities outside of desert tortoise exclusion fencing will be monitored by one or more ABs. A designated lead AB will have the ultimate responsibility for these avoidance and minimization measures.	Pre-construction, construction, O&M (only as specified), decommissioning
GM-8	The Applicant will control the introduction of exotic plant species by implementing weed control activities. The introduction of exotic plant species will be avoided and controlled wherever possible, and may be achieved through physical or chemical removal and prevention, limiting the size of any vegetation and/or ground disturbance to the absolute minimum, and limiting ingress and egress to defined routes. To prevent exotic plants from entering the project site via vehicular sources, measures will be implemented to clean vehicles coming and going from the project area. Earth-moving equipment will be cleaned and inspected prior to transport to the project area.	Construction, O&M, decommissioning
¹ . Avoidance and minimization measures applicable to only the gen-tie line are not included (see Table 2-9 for additional measures specific to the gen-tie line).		

None of the 17 special-status plant species determined to have moderate to high potential to occur within the project area were documented during focused rare plant surveys in 2010, 2013, or 2014. Therefore, it is unlikely that special-status plant species would be impacted with implementation of HCP-covered activities.

Federal Lands Gen-Tie Line

Construction of the Alternative 2 gen-tie line would require permanent and temporary vegetation removal and grading for installation of gen-tie line pole structures and the service road. Total permanent impacts to vegetation communities would be identical under all three options of Alternative 2 (i.e., approximately 2.2 acres) (see Table 4.2-2 below). Total temporary impacts to vegetation communities would be approximately 63.1 acres under Option A and 63.4 acres under Options B and C (Table 4.2-2). Impacts to each vegetation community type mapped in the project area are not known at this time because exact locations of project features within the ROW of Alternative 2 have not been finalized. However, it is anticipated that the majority of temporary and permanent impacts would occur to creosote bush-white bursage scrub given that this is the most prevalent community in the relatively homogeneous project area. Impacts to desert wash habitats (i.e., scalebroom scrub, creosote/wash association, unvegetated ephemeral dry wash, and unvegetated swales) would be avoided to the maximum extent feasible, particularly in Pine Tree Canyon Wash, which would be avoided entirely. The majority of impacts would be temporary (i.e., areas would be disturbed during construction, but would be allowed to return to natural conditions following construction).

Table 4.2-2. Permanent and Temporary Direct Impacts to Vegetation Communities Resulting from Gen-Tie Line Construction							
Alternative 2 – Option A		Alternative 2 – Options B and C		Alternative 3		Alternative 4	
<i>Permanent Impacts (acres)¹</i>	<i>Temporary Impacts (acres)²</i>	<i>Permanent Impacts (acres)¹</i>	<i>Temporary Impacts (acres)²</i>	<i>Permanent Impacts (acres)¹</i>	<i>Temporary Impacts (acres)²</i>	<i>Permanent Impacts (acres)¹</i>	<i>Temporary Impacts (acres)²</i>
2.2	63.1	2.2	63.4	3.2	73.1	7.2	126.0
1. Permanent impacts are defined as those areas that would be permanently impacted over the life of the project, which includes structure and service road footprints. 2. Temporary impacts are defined as those areas that would be disturbed during construction but that would be allowed to return to natural conditions following construction. These include work areas around structures and conductor pull sites.							

Activities associated with construction, O&M, and decommissioning of the Alternative 2 gen-tie line have the potential to introduce nonnative plant species and create airborne dust, sedimentation, and erosion, thereby degrading vegetation communities in the project area. Seeds of nonnative plant species may be introduced to the project area from outside sources on vehicles, people, and equipment. Ground disturbance associated with project activities could promote the establishment and spread of opportunistic nonnative plants introduced to the project area. Additionally, wildfires caused by construction and operation of gen-tie lines are rare, but may occur, and nonnative plant species often become established in burned areas. The potential spread of nonnative species into the surrounding vegetation communities would be considered a permanent indirect impact.

Airborne dust may result from grading, vehicle travel on dirt access roads, and other ground-disturbing activities. Airborne dust can affect plants by reducing the rates of metabolic processes such as photosynthesis and respiration. Grading and vegetation clearing associated with construction of the Alternative 2 gen-tie line may also result in increased erosion and sedimentation in the project area. Impacts from dust, sedimentation, and erosion would be considered a temporary indirect impact.

Potential direct and indirect impacts to vegetation communities resulting from the Alternative 2 gen-tie line would be avoided and minimized through implementation of general measures identified in Table 4.2-1. Mitigation for permanent impacts to vegetation communities would occur through mitigation requirements for impacts to regulated wildlife resources (e.g., desert tortoise and Mohave ground squirrel).

4.2.3 Alternative 3 (Solar Facility and Alternative Federal Lands Gen-Tie)

Direct and Indirect Impacts

Solar Facility Site

Since the solar facility site would be constructed in an identical manner for all of the action alternatives, impacts from implementation of the Alternative 3 solar facility would be identical to those described above for the Alternative 2 solar facility.

Federal Lands Gen-Tie (Alternative Federal Lands Alignment)

Construction of the Alternative 3 gen-tie line would require permanent and temporary vegetation removal and grading for installation of gen-tie line pole structures and the service road. Permanent and temporary direct impacts to vegetation communities under Alternative 3 would be greater than those expected under Alternative 2. Alternative 3 would result in approximately 3.2 acres of permanent direct impacts and approximately 73.1 acres of temporary direct impacts to vegetation communities (see Table 4.2-2). Impacts to each vegetation community type mapped in the project area are not known at this time because exact locations of project features within the ROW of Alternative 3 have not been finalized. However, it is anticipated that the majority of temporary and permanent impacts would occur to Mojave creosote bush scrub, given that this is the most prevalent community in the relatively homogeneous project area. Impacts to desert wash habitats (i.e., unvegetated ephemeral dry wash, unvegetated swales, southern alluvial fan scrub, and creosote wash scrub) would be avoided to the maximum extent feasible, particularly in Pine Tree Canyon Wash, which would be avoided entirely. The majority of impacts would be temporary (i.e., areas would be disturbed during construction, but would be allowed to return to natural conditions following construction).

Activities associated with constructing, operating, and decommissioning of Alternative 3 have the potential to introduce nonnative plant species and create airborne dust, sedimentation, and erosion, thereby degrading vegetation communities in the project area. Seeds of nonnative plant species may be introduced to the project area from outside sources on vehicles, people, and equipment. Ground disturbance associated with project activities could promote the establishment and spread of opportunistic nonnative plants introduced to the project area. Additionally, wildfires caused by construction and operation of gen-tie lines are rare, but may occur, and nonnative plant species often become established in burned areas. The potential spread of nonnative species into the surrounding vegetation communities would be considered a permanent indirect impact.

Airborne dust may result from grading, vehicle travel on dirt access roads, and other ground-disturbing activities. Airborne dust can affect plants by reducing the rates of metabolic processes such as photosynthesis and respiration. Grading and vegetation clearing associated with construction of Alternative 3 may also result in increased erosion and sedimentation in the

project area. Impacts from dust, sedimentation, and erosion would be considered a temporary indirect impact.

Potential direct and indirect impacts to vegetation communities resulting from Alternative 3 would be avoided and minimized through implementation of the general measures identified in Table 4.2-1. Mitigation for permanent impacts to vegetation communities would occur through mitigation requirements for impacts to regulated wildlife resources (e.g., desert tortoise and Mohave ground squirrel).

No special-status plant species were documented within the project area or immediate vicinity (within approximately 100 feet of the project area) during focused rare plant surveys and vegetation mapping surveys. Therefore, direct and indirect impacts to special-status plant species are not anticipated during implementation of the gen-tie line alignment.

4.2.4 Alternative 4 (Private Lands Gen-Tie)

Direct and Indirect Impacts

Solar Facility Site

Since the solar facility site would be constructed in an identical manner for all of the action alternatives, impacts from implementation of the Alternative 4 solar facility would be identical to those described above for the Alternative 2 and Alternative 3 solar facility.

Private Lands Gen-Tie

Construction of the Alternative 4 gen-tie line would require permanent and temporary vegetation removal and grading for installation of gen-tie line pole structures and the service road.

Permanent and temporary direct impacts to vegetation communities would be greatest under Alternative 4 relative to other action alternatives analyzed herein. Alternative 4 would result in approximately 7.2 acres of permanent direct impacts and approximately 126 acres of temporary direct impacts to vegetation communities (see Table 4.2-2). Impacts to each vegetation community type mapped in the project area are not known at this time because exact locations of project features within the ROW of Alternative 4 have not been finalized. However, it is anticipated that the majority of temporary and permanent impacts would occur to Mojave creosote bush scrub given that this is the most prevalent community in the relatively homogeneous project area. Impacts to desert wash habitats (i.e., unvegetated ephemeral dry wash, unvegetated swales, southern alluvial fan scrub, and creosote wash scrub) would be avoided to the maximum extent feasible, particularly in Pine Tree Canyon Wash, which would be avoided entirely. The majority of impacts would be temporary (i.e., areas would be disturbed during construction, but would be allowed to return to natural conditions following construction).

Activities associated with constructing, operating, and decommissioning Alternative 4 have the potential to introduce nonnative plant species and create airborne dust, sedimentation, and

erosion, thereby degrading vegetation communities in the project area. Seeds of nonnative plant species may be introduced to the project area from outside sources on vehicles, people, and equipment. Ground disturbance associated with project activities could promote the establishment and spread of opportunistic nonnative plants introduced to the project area. Additionally, wildfires caused by construction and operation of gen-tie lines are rare but may occur, and nonnative plant species often become established in burned areas. The potential spread of nonnative species into surrounding vegetation communities would be considered a permanent indirect impact.

Airborne dust may result from grading, vehicle travel on dirt access roads, and other ground-disturbing activities. Airborne dust can affect plants by reducing the rates of metabolic processes such as photosynthesis and respiration. Grading and vegetation clearing associated with construction of Alternative 4 may also result in increased erosion and sedimentation in the project area. Impacts from dust, sedimentation, and erosion would be considered a temporary indirect impact.

Potential direct and indirect impacts to vegetation communities resulting from Alternative 4 would be avoided and minimized through implementation of general measures identified in Table 4.2-1. Mitigation for permanent impacts to vegetation communities would occur through mitigation requirements for impacts to regulated wildlife resources (e.g., desert tortoise and Mohave ground squirrel).

No special-status plant species were documented within the project area or immediate vicinity (within approximately 100 feet of the project area) during focused rare plant surveys and vegetation mapping surveys. Therefore, direct and indirect impacts to special-status plant species are not anticipated during implementation of the gen-tie line alignment.

4.3 Biological Resources – Wildlife

4.3.1 Alternative 1 (No Action Alternative)

Direct and Indirect Impacts

Under Alternative 1, USFWS would not approve the Applicant's HCP, nor would USFWS issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining) (Kern County 2009). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in

the future with issuance of a conditional use permit, including solar power generation facilities, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.3.2 Alternative 2 (Solar Facility and Federal Lands Gen-Tie Alignment)

Direct and Indirect Impacts

Solar Facility Site

Desert Tortoise

The entire project area, with the exception of SR-14, has been determined to support suitable habitat for desert tortoise. Grading, trenching, and vegetation removal during site preparation of the solar facility (including pre-construction covered activities such as fencing installation) would directly impact approximately 500 acres of suitable desert tortoise habitat. Direct impacts to suitable desert tortoise habitat are considered long term because habitat impacts would span at least the life of the proposed project.

Direct impacts during constructing, operating, and decommissioning the solar facility could also include disturbance, injury, or mortality of desert tortoise individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, unauthorized collection, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to workers and/or visitors. Desert tortoises could also die or become injured by capture and relocation if these methods are performed improperly, particularly during extreme temperatures or if the animals void their bladders. If multiple desert tortoises are handled by biologists without the use of appropriate protective measures, pathogens could be spread among desert tortoises. For desert tortoises near but not within the project area, removal of and exclusion from habitat within an individual's home range (average home range for males is 111 acres; average home range for females is 40 acres [USFWS 2012]) could result in displacement stress that could result in loss of health, exposure, increased risk of predation, increased intraspecific competition, and death. The likelihood of individual desert tortoises being injured or killed by equipment and activities is expected to be low, given that the entire solar facility would

be fenced with security and desert tortoise exclusion fencing during site preparation, and clearance surveys would be conducted following fence installation to relocate tortoises found within the fenced area.

Indirect impacts to desert tortoise could occur from increased common raven presence associated with the construction of new elevated perching and nesting sites. Development of new elevated perching and nesting sites could increase raven numbers locally, which could result in increased predation on desert tortoise in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens and other desert tortoise predators such as coyotes and feral dogs.

Indirect impacts could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or electrical infrastructure), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of desert tortoise. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially impact existing desert tortoise burrows in the project area and vicinity.

Potential direct and indirect impacts to desert tortoise would be avoided and minimized through implementation of the general measures identified in Table 4.2-1 and desert tortoise-specific measures identified in Table 4.3-1. Direct impacts to suitable desert tortoise habitat (approximately 500 acres) would be mitigated by acquiring and conserving off-site habitat in accordance with ITP conditions under the ESA and CESA. To achieve off-site mitigation obligations, the Applicant has preliminarily identified private lands in the Western Mojave Desert Recovery Unit, located within the larger boundary of a Desert Wildlife Management Area and the Superior-Cronese Critical Habitat unit, and an alternate site in proximity to the project area. Although the precise location of the land is currently confidential because of ongoing land negotiations, biological desktop review and field reconnaissance indicate that the mitigation land supports active desert tortoise populations and exhibits high-quality desert tortoise habitat characteristics.

Table 4.3-1. Desert Tortoise Avoidance and Minimization Measures Applicable to Solar Facility		
Measure Acronym¹	Measure Description	Timing
DT-1	Prior to construction activities, the Applicant will prepare a site-specific Desert Tortoise Relocation Plan. The plan will provide details on desert tortoise clearance surveys and relocation, and will be consistent with current U.S. Fish and Wildlife Service (USFWS) guidelines (USFWS 2009). The Desert Tortoise Relocation Plan is included as Appendix A of the Habitat Conservation Plan (HCP).	Pre-construction
DT-2	The Applicant will submit the name and statement of qualifications in accordance with USFWS format of all proposed Authorized Biologists (ABs) to the applicable resource agency representatives for review and approval at least 30 days prior to initiation of any ground-disturbing activities and pre-activity surveys. Project construction activities will	Pre-construction

Table 4.3-1. Desert Tortoise Avoidance and Minimization Measures Applicable to Solar Facility		
Measure Acronym¹	Measure Description	Timing
	not begin until the ABs are approved by all agencies. ABs will lead the handling and relocation of desert tortoises when necessary. Biological Monitors (BMs) will ensure compliance with the protection measures, but may only assist with clearance surveys under the direction of an AB. BMs may handle desert tortoises at the discretion and under the supervision of an AB. Workers will immediately notify the AB or BM of all desert tortoise observations. The ABs may be replaced with a new AB at any time during construction, operations and maintenance (O&M), or decommissioning with 30 days notification to all agencies. If there are unforeseen circumstances (e.g., AB becomes ill, changes jobs), agencies may be provided 14 days notification.	
DT-3	Prior to ground disturbance at the solar facility, the solar facility will be fenced with permanent desert tortoise exclusion fencing to keep desert tortoises in neighboring habitat from entering the facility site during construction, O&M, and decommissioning. Where the location of desert tortoise exclusion fencing corresponds to the solar facility perimeter security fence, it may be attached to the security fencing. The exclusion fence will follow current fence specifications established by USFWS (USFWS 2009). Where fence burial is not possible, the mesh will be bent at a right angle toward the outside of the fence and covered with dirt, rocks, or gravel to prevent desert tortoise from digging under the fence. Desert tortoise exclusion gates will be established at all solar facility entry points. Temporary fencing will be installed where necessary for each project component during construction activities to prevent desert tortoise entry during construction. Temporary fencing will follow guidelines for permanent fencing, and supporting stakes will be sufficiently spaced to maintain fence integrity. Clearance of the desert tortoise exclusion fencing location must occur within 24 hours prior to fence installation. All desert tortoise exclusion fence construction will be monitored by a BM to ensure that no desert tortoise is harmed. Following installation, the fencing will be inspected monthly and immediately after all major rainfall events. Any damage to the fencing will be temporarily repaired immediately and permanently repaired within 3 days of observing the damage, and will be reported to the resource agencies to determine whether additional measures are necessary. Ground-disturbing activities at the solar facility may begin immediately after fence installation and desert tortoise clearance and relocation.	Pre-construction
DT-4	After fence installation, ABs or BMs under the direction of an AB will conduct clearance surveys for desert tortoise within the fenced solar facility. A minimum of two surveys without finding any desert tortoise or new desert tortoise sign must occur prior to declaring the site clear of desert tortoise. All burrows that could provide shelter for desert tortoise will be excavated during the first clearance survey. Any desert tortoise found within the fenced solar facility will be moved to a location in accordance with the project's Desert Tortoise Relocation Plan (Appendix A of the HCP).	Pre-construction
DT-6	Following clearance surveys, the AB will prepare a report that documents the survey methods used, names of surveyors, timing, weather, handling methods, capture and release locations of all desert tortoise found, individual desert tortoise data, and other relevant data. This report will be submitted within 15 days of completion of the clearance surveys to resource agency representatives.	Pre-construction

Table 4.3-1. Desert Tortoise Avoidance and Minimization Measures Applicable to Solar Facility		
Measure Acronym¹	Measure Description	Timing
DT-7	The Applicant will appoint ABs and BMs to oversee compliance with the avoidance and minimization measures for desert tortoise. The AB or BM will be present during construction activities, and will have the right to halt all activities that are in violation of the desert tortoise protection measures. Work will proceed only after hazards to the desert tortoise are removed and the species is no longer at risk, or the AB has moved the individual from harm's way in accordance with the Desert Tortoise Relocation Plan (Appendix A of the HCP). The AB and BM will have a copy of all the compliance measures while any work is being conducted on-site.	Pre-construction, construction, O&M, decommissioning
DT-8	Intentional killing or collection of special-status plant or wildlife species, including desert tortoise, at the project site and surrounding areas will be prohibited. The ABs and BMs (during construction) will be notified immediately of any such occurrence. An AB will be responsible for notifying resource agency representatives of any such occurrence within 24 hours.	Pre-construction, construction, O&M, decommissioning
DT-9	For emergency response situations, the AB will notify resource agency representatives within 24 hours by telephone, fax, or electronic mail communication.	Pre-construction, construction, O&M, decommissioning
DT-11	Any construction pipe, culvert, or similar structure with a diameter greater than 3 inches stored less than 8 inches aboveground, outside a fenced area of desert tortoise habitat, and left unattended for any length of time during the desert tortoise active period (i.e., early March through early June and September through early November) will be inspected for desert tortoise before the material is moved, buried, or capped. As an alternative, all such structures may be capped or placed on pipe racks.	Pre-construction, construction, O&M, decommissioning
DT-12	<p>In the event a desert tortoise is injured or killed, resource agency representatives will be notified immediately by phone. Notification will occur no later than 12 noon on the business day following the event if it occurs outside of normal business hours so that the resource agencies can determine if further actions are required to protect the species. Written follow-up notification via fax or electronic communication will be submitted to the resource agencies within 2 calendar days of the incident, and will include the following information, as relevant:</p> <p><u>Injured Desert Tortoise.</u> If a desert tortoise is injured as a result of project-related activities during construction, O&M, or decommissioning, the AB will immediately take it to a wildlife rehabilitation and/or veterinarian clinic approved by the resource agencies. Any veterinarian bills for such injured animals will be paid for by the Applicant. Following phone notification, as required above, resource agency representatives will determine the final disposition of the injured animal, if it recovers. Written notification will include, at a minimum, the date, time, location, circumstances of the incident, and name of the facility where the animal was taken.</p> <p><u>Desert Tortoise Fatality.</u> If a desert tortoise is killed by project-related activities during construction, O&M, or decommissioning, a written report with the same information as an injury report will be submitted. The desert tortoise will be salvaged according to guidelines described in Salvaging Injured, Recently Dead, Ill, and Dying Wild, Free-</p>	Pre-construction, construction, O&M, decommissioning

Table 4.3-1. Desert Tortoise Avoidance and Minimization Measures Applicable to Solar Facility		
Measure Acronym¹	Measure Description	Timing
	Roaming Desert Tortoise (Berry 2001). The Applicant will pay to have the desert tortoise transported and necropsied. The report will include the date and time of the finding or incident.	
DT-13	No later than 2 days following the above-required notification of an injured or killed desert tortoise, the Applicant will deliver to resource agency representatives via fax or electronic communication the written report from the AB describing all reported incidents of an injured or killed desert tortoise, identifying who was notified and explaining when the incident occurred.	Pre-construction, construction, O&M, decommissioning
DT-14	On an annual basis, the AB will prepare a report for resource agency representatives documenting the effectiveness and practicality of the avoidance, minimization, and mitigation measures that are in place, and making recommendations for modifying the measures to enhance desert tortoise protection, as needed. The report will also provide information on the overall biological-resources-related activities conducted, including the Worker Environmental Awareness Program (WEAP) training, clearance/pre-activity surveys, monitoring activities, and any observed desert tortoises, including injuries and fatalities.	Pre-construction, construction, O&M, decommissioning
DT-15	The AB will prepare annual monitoring reports that address the management of the mitigation lands acquired to compensate for impacts to desert tortoise. The annual report will be submitted to the Applicant and resource agency representatives at the end of each calendar year, for the duration of the permit.	Pre-construction, construction, O&M, decommissioning
DT-16	The Applicant will implement measures to ensure that construction, O&M, and decommissioning of the project do not attract ravens to the permit area by creating food or water subsidies, perch sites, roost sites, or nest sites.	Pre-construction, construction, O&M, decommissioning
DT-17	An AB will be retained as on-call support during the O&M phase to assist with desert tortoise responses and project reporting, as necessary. In the event that a desert tortoise is found within the solar facility during the O&M phase, all activities in its vicinity will stop until the desert tortoise leaves the immediate work area and is out of harm's way. If the desert tortoise is in immediate danger of harm or does not move out of the planned work area in a reasonable time to allow for necessary work (reasonable time will be determined by the AB based on the proposed activities and their urgency), the AB will capture and relocate the animal to a safe location according to the USFWS protocol (USFWS 2009) and the Desert Tortoise Relocation Plan. An on-site Field Contact Representative will be trained by the AB to handle desert tortoises in case of emergencies where a desert tortoise is in imminent danger. The Field Contact Representative will handle the desert tortoise in accordance with the approved Desert Tortoise Relocation Plan.	O&M
DT-18	The AB will responsible for WEAP trainings, surveys, compliance monitoring, and reporting.	Pre-construction, construction, O&M, decommissioning
DT-19	The potential for vehicles to strike desert tortoises will be minimized by educating employees on the proper procedures for operating vehicles and equipment within the project site. Personnel will use established roadways (paved or unpaved) when traveling to and from the project site. Cross-country vehicle and equipment use outside of designated work areas will be prohibited. To minimize the likelihood for vehicle strikes of desert tortoise, speed limits will not exceed 25	Pre-construction, construction, O&M, decommissioning

Table 4.3-1. Desert Tortoise Avoidance and Minimization Measures Applicable to Solar Facility		
Measure Acronym¹	Measure Description	Timing
	miles per hour for travel outside of the permanent tortoise exclusion fence. The AB will define specific speed limits for project areas depending on site conditions such as the likelihood of desert tortoise occurrence, visibility conditions, and weather.	
DT-20	A trash abatement program will be established for the project to reduce the attractiveness to opportunistic predators of desert tortoise such as common raven (<i>Corvus corax</i>), coyote (<i>Canis latrans</i>), and free-roaming dogs. Trash and food items will be kept in closed containers, removed as needed, and disposed of at an appropriate off-site landfill. Dead and injured wildlife found within the permit boundary will be removed to reduce attraction of opportunistic predators. Dead and injured wildlife will be handled and removed in accordance with any applicable project permits and plans.	Pre-construction, construction, O&M, decommissioning
DT-21	Workers will be prohibited from bringing pets and firearms to the project site.	Pre-construction, construction, O&M, decommissioning
DT-22	Any time a vehicle or construction equipment is parked in desert tortoise habitat outside of the permanent tortoise exclusion fence, the ground under the vehicle will be inspected for the presence of desert tortoise before the vehicle/equipment is moved. If a desert tortoise is present, the vehicle/equipment will not be moved until the desert tortoise moves on its own away from the vehicle/equipment. If it does not move within 15 minutes during construction, the AB will capture and relocate the animal to a safe location according to USFWS protocol. During O&M, a trained and approved Field Contact Representative may move a desert tortoise out of harm's way that does not move on its own in accordance with the approved Desert Tortoise Relocation Plan (Appendix A of the HCP).	Pre-construction, construction, O&M (only as specified), decommissioning
DT-23	All vehicles and equipment will be in proper working condition to ensure that no potential exists for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. The AB and BM will be immediately (i.e., same day) informed of any hazardous spills. Hazardous spills will be immediately cleaned up and the surface recontoured so it does not pose a hazard to desert tortoise. The contaminated soil will be properly disposed of at a licensed facility.	Pre-construction, construction, O&M, decommissioning
DT-24	Water or dust palliatives will be applied to the construction right-of-way, dirt roads, trenches, spoil piles, and other areas where ground disturbance takes place to minimize dust emissions and topsoil erosion. Dust palliatives will be nontoxic to wildlife and plants. For construction during the desert tortoise active season, an AB or BM will patrol areas of disturbance to ensure that water does not puddle for long periods and attract desert tortoise, common ravens, or other wildlife to the project site. Operational ponding will be avoided through careful grading and hydrologic design.	Pre-construction, construction, O&M (only as specified), decommissioning
¹ Avoidance and minimization measures applicable to only the generation tie line are not included (see Table 2-9 for additional measures specific to the generation tie line).		

Mohave Ground Squirrel

The entire project area, with the exception of SR-14, has been determined to support suitable habitat for Mohave ground squirrel. Grading, trenching, and vegetation removal during site

preparation of the solar facility (including pre-construction covered activities such as fencing installation) would directly impact up to approximately 500 acres of suitable Mohave ground squirrel habitat. Direct impacts to suitable Mohave ground squirrel habitat are considered long term because habitat impacts would span at least the life of the proposed project.

Mohave ground squirrel presence within the project area has not been confirmed, and potentially suitable burrows were not commonly encountered during field surveys for the proposed project. If Mohave ground squirrel is present, direct impacts during constructing, operating, and decommissioning the solar facility could result in disturbance, injury, or mortality of individuals. Disturbance, injury, or mortality could result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to workers and/or visitors.

Potential indirect impacts to Mohave ground squirrel, if present, could result from increased predation pressure from common ravens and raptors associated with construction of new elevated perching and nesting sites. Development of new elevated perching and nesting sites could increase raven and raptor numbers locally, which could result in increased predation on Mohave ground squirrel in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens, raptors, and other ground squirrel predators such as coyotes and feral dogs.

Indirect impacts could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or electrical infrastructure), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of Mohave ground squirrel. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially impact potential ground squirrel burrows in the project area.

Potential direct and indirect impacts to Mohave ground squirrel would be avoided and minimized through implementation of the general measures identified in Table 4.2-1 and Mohave-ground-squirrel-specific measures identified in Table 4.3-2. Direct impacts to suitable Mohave ground squirrel habitat would be mitigated by acquiring and conserving off-site habitat in accordance with ITP conditions under the CESA. The mitigation land for Mohave ground squirrel must be approved by CDFW, and a fee title or conservation easement would be granted to CDFW or other CDFW-approved nonprofit entity.

Table 4.3-2. Mohave Ground Squirrel Avoidance and Minimization Measures Applicable to Solar Facility		
Measure Acronym	Measure Description	Timing
MGS-1	On-site monitoring of ground-disturbing activities by a qualified biologist in the project area will occur. During construction activities, monthly and final compliance reports will be provided to California Department of Fish and Wildlife (CDFW) and other relevant regulatory agencies, documenting the effectiveness of mitigation measures and the level of take associated with the proposed project.	Pre-construction, construction, O&M (only as specified), decommissioning
MGS-2	Impacts from vehicle strikes will be minimized by employee education on the proper procedures for operating vehicles on the site. Personnel will use established roadways (paved or unpaved) in traveling to and from the survey area and will also use existing tracks on-site whenever possible. Crosscountry vehicle and equipment use outside of designated work areas will be prohibited. To minimize the likelihood for vehicle strikes of Mohave ground squirrel, speed limits shall not exceed 25 miles per hour for travel outside of the permanent tortoise exclusion fence. The AB will define specific speed limits for project areas depending on site conditions such as the likelihood of Mohave ground squirrel occurrence, visibility conditions, and weather.	Pre-construction, construction, O&M, decommissioning
MGS-3	A trash abatement program will be established. Trash and food items will be contained in closed containers and removed daily to reduce the attractiveness to opportunistic predators such as common ravens, coyotes, and feral dogs.	Pre-construction, construction, O&M, decommissioning

Burrowing Owl

The entire project area, with the exception of SR-14, has been determined to support suitable nesting and foraging habitat for burrowing owl. Grading, trenching, and vegetation removal during site preparation of the solar facility (including pre-construction covered activities such as fence installation) would directly impact up to approximately 500 acres of suitable burrowing owl habitat. Direct impacts to suitable burrowing owl habitat are considered long term because habitat impacts would span the life of the proposed project.

Burrowing owls were not detected during 2011 protocol surveys for the species; however, suitable burrows (one with fresh sign) were found in and around the project area. Given the propensity for this species to nest in disturbed habitat, the project area and/or vicinity could become occupied by burrowing owl prior to construction or during the operational lifespan of the project. If burrowing owl is present, direct impacts during construction, operation, and decommissioning of the solar facility could include disturbance, injury, or mortality of individuals. Disturbance, injury, or mortality could result from individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to workers and/or visitors. The operational impacts of PV solar facilities on burrowing owls are not well studied. However, burrowing owls may be susceptible to collisions with PV panels or other project features, as these impacts have been found with other birds (CEC 2013).

Potential indirect impacts to burrowing owl, if present, could result from increased predation pressure from common ravens and other raptors associated with the construction of new elevated perching and nesting sites. Development of new elevated perching and nesting sites could increase raven and raptor numbers locally, which could result in increased predation on

burrowing owls in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens, other raptors, and other burrowing owl predators such as coyotes and feral dogs.

Indirect impacts could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or electrical infrastructure), both of which could reduce adjacent habitat quality for burrowing owl. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially impact burrows in the project area.

Potential direct and indirect impacts to burrowing owl would be avoided and minimized through implementation of the general measures identified in Table 4.2-1.

Other Raptors and Migratory Birds

Potential direct impacts to other raptor species and migratory birds protected by the MBTA include removal of nesting and/or foraging habitat during construction of the proposed project. Generally, grading, trenching, and vegetation removal during site preparation of the solar facility (including pre-construction covered activities such as fence installation) would directly impact up to approximately 500 acres of suitable nesting and foraging habitat for raptors and migratory birds. However, the degree of impact on individual raptor and migratory bird species would vary depending on species-specific behaviors in the project area and habitat requirements. Potential impacts to breeding habitat for raptors and migratory birds would be more detrimental relative to impacts to foraging habitat for such species.

Potential direct impacts to raptor species and migratory birds also include potential injury or mortality. Injury or mortality could occur during construction if individuals are struck by equipment or vehicles. Injury or mortality to avian species resulting from construction most frequently occurs during vegetation clearing and involves eggs, nestlings, and recently fledged young that cannot safely avoid equipment. In addition, although the operational impacts of PV solar facilities on avian species are not well studied, migrating birds may be susceptible to collisions with PV panels or other project features, as these impacts have been recently documented at other PV solar facilities (CEC 2013). Migrant water birds have composed the majority of avian mortalities at the Desert Sunlight PV facility (CEC 2013, 2014; Kagan et al. 2014). However, the Desert Sunlight PV facility contains ponds that are an attractive feature to avian species (Kagan et al. 2014). The proposed project would not contain ponds that would attract avian species to the site. Large areas of solar PV panels in the desert environment may also mimic the reflectivity of water bodies and inadvertently attract water bird species (Kagan et al. 2014), although studies have shown that glare intensity and/or reflectivity of PV modules are lower than that of water and similar to asphalt (Dudek 2014).

Another factor influencing mortality is polarized light, which is naturally polarized by large bodies of water and can sometimes be artificially polarized by large, smooth, dark surfaces such as PV panels (CEC 2013). Polarized light pollution caused by solar PV panels may affect foraging behaviors, navigation, and orientation in birds, leading to potential collisions with panels (Horvath et al. 2009; Horvath et al. 2010). Avian species confusing the site with water may collide with solar panels and/or become stranded in solar fields, resulting in fatalities (Kagan et al. 2014).

Potential indirect impacts to raptors and migratory birds include increased noise levels, human use and the potential for long-term unauthorized trespass, erosion, sedimentation, storm water contaminant runoff, and risk of fire, as well as the potential introduction and proliferation of invasive nonnative plant species. These indirect impacts have the potential to degrade raptor and migratory bird habitat, and alter breeding, foraging, and migratory behaviors.

Potential direct and indirect impacts to other raptors and migratory birds would be avoided and minimized through implementation of the general measures identified in Table 4.2-1. In addition, the Applicant has adopted avian-specific measures to avoid, minimize, and monitor impacts to all avian species. These measures include using non-reflective flat-plate PV panels, avoiding impacts to breeding birds by performing vegetation clearing and ground disturbance outside of the avian breeding season or establishing buffers around nests, and minimizing noise pollution.

American Badger

The entire project area, with the exception of SR-14, was determined to support suitable habitat for American badger. Grading, trenching, and vegetation removal during site preparation of the solar facility (including pre-construction covered activities such as fence installation) would directly impact up to approximately 500 acres of suitable American badger habitat. Direct impacts to suitable American badger habitat are considered long term because habitat impacts would span the life of the proposed project.

An American badger was observed in a burrow west of SR-14 in 2011, and three dens have been observed in the project area and immediate vicinity. Potential direct impacts during construction, operation, and decommissioning of the solar facility could include disturbance, injury, or mortality of American badger individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows/dens, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to workers and/or visitors.

Indirect impacts to American badger could result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or electrical infrastructure), both of which could reduce habitat quality for American badger. Potential

deposition of sediment loads during heavy rain events and flooding downstream could potentially impact existing burrows/dens in the project area.

Potential direct and indirect impacts to American badger would be avoided and minimized through implementation of the general measures identified in Table 4.2-1.

Wildlife Corridors

The project area does not lie within a wildlife connectivity area as identified by the California Essential Habitat Connectivity Project (Spencer et al. 2010). However, at the local level, wildlife species are likely to use the project area and surrounding large expanses of open habitat for movement related to dispersal and home range activities. In addition, the proposed project is located within the Pacific Flyway, a major north/south migration route for birds that travel between North and South America.

Construction of the proposed project would result in the installation of fencing that may alter terrestrial wildlife movement in the project area. However, given that open space exists surrounding the project area, and wildlife is generally not concentrated through the project area, terrestrial wildlife would likely move around the fenced solar facility, albeit with potential increased energy expenditure. Regardless of potential increased energy expenditure associated with movements around the fenced solar facility, construction of the proposed project is not likely to significantly alter or prohibit terrestrial wildlife movement in the project area. Construction of the proposed project would not result in the installation of any structures that would prevent avian movement through the area.

Indirect impacts to wildlife movement (including terrestrial and avian) could result during construction, operation, and decommissioning from increased human presence, noise, and edge effects associated with development. These indirect impacts could result in avoidance of the project area during movements, and could have harmful impacts on individuals, population genetics, and metapopulation dynamics. These impacts would vary depending on the population structure, size of the home range, migration patterns, and dispersal movements of the species being considered, as well as the species' behavioral response to noise, degraded surrounding habitat, and other anthropogenic influences.

Potential indirect impacts to wildlife movement would be avoided and minimized through implementation of the general measures identified in Table 4.2-1.

Federal Lands Gen-Tie

Desert Tortoise

Construction activities (i.e., vegetation removal and grading) associated with the Alternative 2 gen-tie line alignment would result in permanent and temporary direct impacts to suitable desert tortoise habitat. The entire project area was determined to support suitable desert tortoise habitat;

therefore, it is assumed that all areas impacted by the Alternative 2 gen-tie line support suitable desert tortoise habitat. Total permanent impacts to suitable desert tortoise habitat would be identical under all three options of Alternative 2 (i.e., approximately 2.2 acres) (see Table 4.2-2). Total temporary impacts to suitable desert tortoise habitat would be approximately 63.1 acres under Option A and 63.4 acres under Options B and C (see Table 4.2-2).

Direct impacts during construction, O&M, and decommissioning of the Alternative 2 gen-tie line may include disturbance, injury, or mortality of desert tortoise individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors. Desert tortoise may also die or become injured when captured for relocation purposes, particularly during extreme temperatures or if they void their bladders. Pathogens may also be spread among desert tortoises. For desert tortoises near but not within the project area, removal of habitat within an individual's home range could result in displacement stress that could result in loss of health, exposure, increased risk of predation, increased intraspecific competition, and death.

Indirect impacts to desert tortoise could occur from increased common raven presence associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase local raven numbers, which could result in increased predation on desert tortoise in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens and other desert tortoise predators such as coyotes and feral dogs.

Indirect effects could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of desert tortoise. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect existing desert tortoise burrows in the project area.

Potential direct and indirect impacts to desert tortoise would be avoided and minimized through implementation of the general measures identified in Table 4.2-1 and desert-tortoise-specific measures identified in Table 4.3-1. Permanent and temporary impacts to suitable desert tortoise habitat would be mitigated by acquiring and conserving off-site habitat in accordance with ITP conditions under the Federal ESA and CESA.

Mohave Ground Squirrel

Construction activities (i.e., vegetation removal and grading) associated with the Alternative 2 gen-tie line would result in permanent and temporary direct impacts to suitable Mohave ground squirrel habitat. The entire project area was determined to support suitable Mohave ground squirrel habitat; therefore, it is assumed that all areas impacted by the Alternative 2 gen-tie line

support suitable Mohave ground squirrel habitat. Total permanent impacts to suitable Mohave ground squirrel habitat would be identical under all three options of Alternative 2 (i.e., approximately 2.2 acres) (see Table 4.2-2). Total temporary impacts to suitable Mohave ground squirrel habitat would be approximately 63.1 acres under Option A and 63.4 acres under Options B and C (see Table 4.2-2).

Mohave ground squirrel presence within the project area has not been confirmed, and potentially suitable burrows were not commonly encountered during field surveys for the proposed project. If Mohave ground squirrel is present, direct impacts during construction, O&M, and decommissioning of the Alternative 2 gen-tie line may include disturbance, injury, or mortality of Mohave ground squirrel individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors.

Potential indirect impacts to Mohave ground squirrel, if present, could result from increased predation pressure from common ravens and raptors associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase raven and raptor numbers locally, which could result in increased predation on Mohave ground squirrel in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens, raptors, and other predators of Mohave ground squirrel such as coyotes and feral dogs.

Indirect effects could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of Mohave ground squirrel. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect Mohave ground squirrel burrows in the project area.

Potential direct and indirect impacts to Mohave ground squirrel would be avoided and minimized through implementation of the general measures identified in Table 4.2-2 and the Mohave-ground-squirrel-specific measures identified in Table 4.3-2. Permanent and temporary impacts to suitable Mohave ground squirrel habitat would be mitigated by acquiring and conserving off-site habitat in accordance with ITP conditions under the CESA.

Burrowing Owl

Construction activities (i.e., vegetation removal and grading) associated with the Alternative 2 gen-tie line would result in permanent and temporary direct impacts to suitable burrowing owl habitat. The entire project area was determined to support suitable burrowing owl habitat; therefore, it is assumed that all areas impacted by the Alternative 2 gen-tie line support suitable

burrowing owl habitat. Total permanent impacts to suitable burrowing owl habitat would be identical under all three options of Alternative 2 (i.e., approximately 2.2 acres) (see Table 4.2-2). Total temporary impacts to suitable burrowing owl habitat would be approximately 63.1 acres under Option A and 63.4 acres under Options B and C (see Table 4.2-2).

Burrowing owls were not detected during 2011 protocol surveys for the species; however, suitable burrows (one with fresh sign) were found south of the project area, in and around the adjacent proposed private lands solar facility site. Given the propensity of this species to nest in disturbed habitat, the project area and/or vicinity could become occupied by burrowing owl prior to construction or during the operational lifespan of the proposed project. If burrowing owl is present, direct impacts during construction, operation, and decommissioning of the Alternative 2 gen-tie line may also include disturbance, injury, or mortality of individuals. Disturbance, injury, or mortality may result from individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors. In addition, burrowing owls potentially occupying the project area may be injured or killed by collisions with or electrocution by overhead transmission wires.

Potential indirect impacts to burrowing owl, if present, could result from increased predation pressure from other raptors associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase raptor numbers locally, which could result in increased predation on burrowing owl in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract raptors and other predators of burrowing owl, such as coyotes and feral dogs.

Indirect effects could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality for burrowing owl. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect burrows in the project area.

Potential direct and indirect impacts to burrowing owl would be avoided and minimized through implementation of the general measures identified in Table 4.2-1. In addition, the avian-specific measures contained in Table 4.3-3 would be implemented and would provide broad protections for all avian species. The Applicant would also comply with Avian Power Line Interaction Committee (APLIC 2012) guidelines for preventing avian electrocutions and collisions with overhead power lines to avoid and minimize impacts to burrowing owl and other avian species.

Table 4.3-3. Avian-Specific Avoidance and Minimization Measures

Measure Acronym	Measure Description	Timing
ASM-1	When above-ground lines, transformers, or conductors are necessary, all will be spaced and designed to comply with the Avian Power Line Interaction Committee (APLIC) (2012) suggested practices to prevent avian electrocutions.	Design
ASM-2	When above-ground lines are necessary, power line/wire marking devices including aerial marker spheres, swinging plates, bird diverters, paint, and other bird avoidance devices will be used if determined necessary to prevent avian collisions as outlined in the APLIC Reducing Avian Collisions with Power Lines: State of the Art document (2012). Bird flight diverters have proven to be effective for reducing and preventing bird collisions in some cases (CEC 2002).	Design
ASM-3	The lattice structures, if used, will be designed and/or fitted to prevent raptors and other birds from nesting in accordance with APLIC Guidelines to the extent practicable.	Design
ASM-4	To the extent possible, vegetation clearing and ground disturbance will occur outside the typical avian breeding season (February 15 through September 15). If vegetation clearing and ground disturbance must occur during the general avian breeding season, a pre-construction nest survey will be conducted within the impact area and a 500-foot buffer (150-meter) (where off-site access is granted) by the biological monitor no more than 3 days prior to the start of construction in any given area of the project footprint. Construction crews will coordinate with the biological monitor at least 3 days prior to the start of vegetation clearing and ground disturbance activity in a given area to ensure that it has been adequately surveyed. If no active nests are discovered vegetation clearing and ground disturbance may proceed. If active nests are observed that could be disturbed by vegetation clearing and ground disturbance activities these nests and an appropriately sized buffer will be avoided until the young have fledged and/or the monitor determines that no substantial impacts are anticipated to the nesting birds or their young. Typically a 500-foot (150-meter), no-disturbance buffer will be created around active raptor nests (0.5-mile [804-meter] buffer for an active Swainson's hawk nest), a 250-foot (76-meter), no-disturbance buffer will be created around nests of non-raptor special-status birds and a no-disturbance buffer less than 250 feet (75 meters) will be created for common passerines. The biological monitor will be responsible for coordinating with USFWS to determine if vegetation clearing, ground disturbance, and associated construction activities could disturb an active nest, the appropriately sized buffer to avoid active nests, and when nests are no longer active. If vegetation clearing and ground disturbance ceases for 3 or more consecutive days during the nesting season, repeat nesting bird surveys will be required to ensure new nesting locations have not been established within the impact area and the defined buffers.	Construction
ASM-5	Construction-generated noise may result in disturbance to nesting migratory birds. The following measures will be incorporated to minimize noise generated from construction activities: <ul style="list-style-type: none"> a. Heavy equipment will be repaired as far as practical from habitats where nesting birds may be present. The biological monitor will determine where heavy equipment repair may take place onsite. b. Construction equipment, including generators and compressors, will be equipped with manufacturers' standard noise-control devices or better (e.g., mufflers, acoustical lagging, and/or engine enclosures). 	Construction

Table 4.3-3. Avian-Specific Avoidance and Minimization Measures

Measure Acronym	Measure Description	Timing
	c. The construction contractor will maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.	
ASM-6	Pre-construction surveys will occur during the non-breeding season (September 1 through January 31) regardless of the construction start date to identify BUOW that may breed onsite during the breeding season (February 1 through August 31). Per CDFW guidance (CDFG 2012), a take avoidance survey (i.e., pre-construction clearance survey) will be conducted by a Biological Monitor to determine presence or absence of BUOW no fewer than 14 days and no more than 30 days prior to initiating construction activities. Surveys will include areas within the project footprint and a surrounding 500-foot (150-meter) buffer (where access is granted). If BUOW activity is detected at a burrow during the non-breeding season, a 164-foot (50-meter) buffer will be flagged surrounding the occupied burrow. If BUOW activity is detected at a burrow during the breeding season, a 246-foot (75-meter) buffer will be flagged surrounding the occupied burrow. If BUOW are detected with the project footprint, the applicant will coordinate with CDFW to discuss exclusion measures that will be outlined in a Burrowing Owl Exclusion Plan.	Construction
ASM-7	Incidental avian carcasses or injured birds found during construction will be documented. Should carcasses be found by project personnel, the carcass will be photographed, the location will be marked, the carcass will not be moved, and a Biological Monitor will be contacted to examine the carcass. When a carcass is detected the following data will be recorded (to the extent possible): observer, date/time, species or most precise species group possible, sex, age, estimated time since death, cause of death or other pertinent information, distance and bearing to nearest structure that may have been associated with the mortality, location (recorded with a Global Positioning System [GPS]), and condition of carcass. Carcasses incidentally detected during construction will be collected under a Special Permit – Utilities (SPUT) Permit issued to the project Applicant, rubber gloves will be used to handle all carcasses to eliminate possible transmission of disease. Carcasses will be placed in a plastic bag, labeled, and frozen for up to one year for future reference and possible necropsy if cause of death cannot be determined upon physical inspection. Incidental finds during construction will not be included in any statistical analyses.	Construction
ASM-8	To the extent possible, O&M activities requiring vegetation clearing or trimming will occur outside the general avian breeding season (February 15 through September 15). If vegetation clearing or trimming must occur during the general avian breeding season, a pre-construction nest survey will be conducted within the impact area and a 500-foot (150-meter) buffer by the Biological Monitor no more than 3 days prior to the start of clearing or trimming. If no active nests are discovered, clearing or trimming may proceed with no additional measures. If active nests are observed that could be disturbed by construction activities these nests and an appropriately sized buffer will be avoided until the young have fledged. The Biological Monitor will be responsible for determining if clearing or trimming activities could disturb an active nest, the appropriately sized buffer to avoid active nests, and when nests are no longer active. If clearing or trimming ceases for 3 consecutive days following which clearing or trimming is reinitiated during the nesting season, additional nesting bird surveys will be required.	Operations and Maintenance

Other Raptors and Migratory Birds

Potential direct impacts to other raptor species and migratory birds protected by the MBTA include removal of nesting and/or foraging habitat during construction of the proposed project. Total permanent impacts to suitable nesting and foraging habitat for raptors and migratory birds would be identical under all three options of the Alternative 2 gen-tie line (i.e., approximately 2.2 acres) (Table 4.2-2). Total temporary impacts to suitable nesting and foraging habitat for raptors and migratory birds would be approximately 63.1 acres under Option A and 63.4 acres under Options B and C (Table 4.2-2). The degree of impact on individual raptor and migratory bird species would vary depending on species-specific behaviors in the project area and habitat requirements. Potential impacts to raptor and migratory bird nest sites would be more detrimental relative to impacts to foraging habitat for such species. Direct impacts to tree or cliff raptor nest sites are not expected, given that these features are generally absent from the project area; however, nest sites for ground-nesting raptors may be directly impacted during construction of the Alternative 2 gen-tie line.

Potential direct impacts to other raptor species and migratory birds also include potential injury or mortality. Injury or mortality may occur during construction if individuals are struck by equipment or vehicles. Injury or mortality to avian species resulting from construction most frequently occurs during vegetation clearing and involves eggs, nestlings, and recently fledged young that cannot safely avoid equipment. Injury or mortality may also result from collisions with or electrocution from overhead transmission wires. Avian power line collisions are a widespread problem with potentially significant local impacts when high-risk conditions are present (CEC 2002). The level of risk depends on a combination of biological and physical factors such as weather, design and placement of transmission structures, and species-specific behavior.

Potential indirect impacts to raptors and migratory birds include increased noise levels, human use and the potential for long-term unauthorized trespass, erosion, sedimentation, storm water contaminant runoff, and risk of fire, as well as the potential introduction and proliferation of invasive nonnative plant species. These indirect impacts have the potential to degrade raptor and migratory bird habitat, and alter breeding, foraging, and migratory behaviors.

Potential direct and indirect impacts to other raptors and migratory birds would be avoided and minimized through implementation of the general measures identified in Table 4.2-1. In addition, the avian-specific measures contained in Table 4.3-3 would be implemented, and would provide broad protections for all avian species. The Applicant would also comply with Avian Power Line Interaction Committee (APLIC 2012) guidelines for preventing avian electrocutions and collisions with overhead power lines.

American Badger

Construction activities (i.e., vegetation removal and grading) associated with the Alternative 2 gen-tie line would result in permanent and temporary direct impacts to suitable American badger habitat. The entire project area was determined to support suitable American badger habitat; therefore, it is assumed that all areas impacted by the Alternative 2 gen-tie line support suitable badger habitat. Total permanent impacts to suitable American badger habitat would be identical under all three options of Alternative 2 (i.e., approximately 2.2 acres) (see Table 4.2-2). Total temporary impacts to suitable American badger habitat would be approximately 63.1 acres under Option A and 63.4 acres under Options B and C (see Table 4.2-2).

An American badger was observed in a burrow west of SR-14 in 2011, and three dens were observed in the project area and immediate vicinity. Potential direct impacts during construction, operation, and decommissioning of each gen-tie line alignment alternative may include disturbance, injury, or mortality of American badger individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows/dens, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors.

Indirect effects to American badger could result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce habitat quality for American badger. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect existing burrows/dens in the project area.

Potential direct and indirect impacts to American badger would be avoided and minimized through implementation of the general measures identified in Table 4.2-1.

Wildlife Corridors

The project area does not lie within a wildlife connectivity area as identified by the California Essential Habitat Connectivity Project (Spencer et al. 2010). However, at the local level, wildlife species are likely to use the project area and surrounding large expanses of open habitat for movement related to dispersal and home range activities. In addition, the proposed project is located within the Pacific Flyway, a major north/south migration route for birds that travel between North and South America.

Construction of the Alternative 2 gen-tie line would not result in the permanent or temporary installation of structures that would prevent wildlife (including terrestrial and avian) movement through the project area. In addition, use of the service road during construction, operation, and decommissioning of the Alternative 2 gen-tie line would be low, and would not prohibit terrestrial wildlife movement between large patches of habitat. Therefore, direct impacts to wildlife corridors resulting from the Alternative 2 gen-tie line are not expected.

Indirect impacts to wildlife movement (including terrestrial and avian) may result during construction, operation, and decommissioning of the Alternative 2 gen-tie line from increased human presence, noise, and edge effects associated with development. These indirect impacts may result in avoidance of the project area during movements, and may have harmful effects on individuals. These impacts may vary depending on the population structure, size of the home range, migration patterns, and dispersal movements of the species being considered, as well as the species' behavioral response to noise, degraded surrounding habitat, and other anthropogenic influences. Indirect impacts to wildlife movement following construction would be minimal, given that human presence and activity during O&M of Alternative 2 would be minimal and infrequent.

Potential indirect impacts to wildlife movement would be avoided and minimized through implementation of the general measures identified in Table 4.2-1.

4.3.3 Alternative 3 (Solar Facility and Federal Lands Gen-Tie Alignment)

Direct and Indirect Impacts

Solar Facility Site

Since the solar facility site would be constructed in an identical manner for all of the action alternatives, impacts from implementation of the Alternative 3 solar facility would be identical to those described above for the Alternative 2 solar facility.

Federal Lands Gen-Tie (Alternative Federal Lands Alignment)

Desert Tortoise

Construction activities (i.e., vegetation removal and grading) associated with Alternative 3 would result in permanent and temporary direct impacts to suitable desert tortoise habitat. The entire project area was determined to support suitable desert tortoise habitat; therefore, it is assumed that all areas impacted by Alternative 3 support suitable desert tortoise habitat. Alternative 3 would result in approximately 3.2 acres of permanent direct impacts and approximately 73.1 acres of temporary direct impacts to suitable desert tortoise habitat (see Table 4.2-2). Permanent and temporary direct impacts to suitable desert tortoise habitat under Alternative 3 would be greater than those expected under Alternative 2.

Direct impacts during construction, operation, and decommissioning of Alternative 3 may also include disturbance, injury, or mortality of desert tortoise individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors. Desert tortoises may also die or become injured when captured for relocation purposes, particularly during extreme temperatures or if they void their bladders. Pathogens may also be spread among desert tortoises. For desert tortoises near but not within the project area, removal of habitat within an

individual's home range could result in displacement stress that could result in loss of health, exposure, increased risk of predation, increased intraspecific competition, and death.

Indirect impacts to desert tortoise could occur from increased common raven presence associated with the construction of new elevated perching and nesting sites (i.e., transmission line structures). Development of new elevated perching and nesting sites could increase local raven numbers, which could result in increased predation on desert tortoise in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens and other desert tortoise predators such as coyotes and feral dogs.

Indirect effects could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of desert tortoises. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect existing desert tortoise burrows in the project area.

Potential direct and indirect impacts to desert tortoise would be avoided and minimized through implementation of the general measures identified in Table 4.2-1 and the desert-tortoise-specific measures identified in Table 4.3-1. Permanent and temporary impacts to suitable desert tortoise habitat would be mitigated by acquiring and conserving off-site habitat in accordance with ITP conditions under the Federal ESA and CESA.

Mohave Ground Squirrel

Construction activities (i.e., vegetation removal and grading) associated with Alternative 3 would result in permanent and temporary direct impacts to suitable Mohave ground squirrel habitat. The entire project area was determined to support suitable Mohave ground squirrel habitat; therefore, it is assumed that all areas impacted by Alternative 3 support suitable Mohave ground squirrel habitat. Alternative 3 would result in approximately 3.2 acres of permanent direct impacts and approximately 73.1 acres of temporary direct impacts to suitable Mohave ground squirrel habitat (see Table 4.2-2). Permanent and temporary direct impacts to suitable Mohave ground squirrel habitat under Alternative 3 would be greater than those expected under Alternative 2.

Mohave ground squirrel presence within the project area has not been confirmed, and potentially suitable burrows were not commonly encountered during field surveys for the proposed project. If Mohave ground squirrel is present, direct impacts during construction, operation, and decommissioning of Alternative 3 may also include disturbance, injury, or mortality of Mohave ground squirrel individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors.

Potential indirect impacts to Mohave ground squirrel, if present, could result from increased predation pressure from common ravens and raptors associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase raven and raptor numbers locally, which could result in increased predation on Mohave ground squirrel in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract common ravens, raptors, and other predators of Mohave ground squirrel such as coyotes and feral dogs.

Indirect effects could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality, diminish valuable forage, and impede movement of Mohave ground squirrels. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect potential Mohave ground squirrel burrows in the project area.

Potential direct and indirect impacts to Mohave ground squirrel would be avoided and minimized through implementation of the general measures identified in Table 4.2-1 and the Mohave-ground-squirrel-specific measures identified in Table 4.3-2. Permanent and temporary impacts to suitable Mohave ground squirrel habitat would be mitigated by acquiring and conserving off-site habitat in accordance with ITP conditions under the CESA.

Burrowing Owl

Construction activities (i.e., vegetation removal and grading) associated with Alternative 3 would result in permanent and temporary direct impacts to suitable burrowing owl habitat. The entire project area was determined to support suitable burrowing owl habitat; therefore, it is assumed that all areas impacted by Alternative 3 support suitable burrowing owl habitat. Alternative 3 would result in approximately 3.2 acres of permanent direct impacts and approximately 73.1 acres of temporary direct impacts to suitable burrowing owl habitat (see Table 4.2-2). Permanent and temporary direct impacts to suitable burrowing owl habitat under Alternative 3 would be greater than those expected under Alternative 2.

Burrowing owls were not detected during 2011 protocol surveys for the species; however, suitable burrows (one with fresh sign) were found south of the project area, in and around the adjacent proposed private lands solar facility site. Given the propensity of this species to nest in disturbed habitat, the project area and/or vicinity could become occupied by burrowing owl prior to construction or during the operational lifespan of the proposed project. If burrowing owl is present, direct impacts during construction, operation, and decommissioning of Alternative 3 may also include disturbance, injury, or mortality of individuals. Disturbance, injury, or mortality may result from individuals being crushed or buried in their burrows, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and

encounters with pets belonging to visitors. In addition, burrowing owls potentially occupying the project area may be injured or killed by collisions with or electrocution from overhead transmission wires.

Potential indirect impacts to burrowing owl, if present, could result from increased predation pressure from other raptors associated with the construction of new elevated perching and nesting sites (e.g., transmission line structures). Development of new elevated perching and nesting sites could increase raptor numbers locally, which could result in increased predation on burrowing owl in the project area and vicinity. Additionally, garbage, road-killed animals, and water from increased human presence could attract raptors and other predators of burrowing owl such as coyotes and feral dogs.

Indirect effects could also result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce adjacent habitat quality for burrowing owl. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect burrows in the project area.

Potential direct and indirect impacts to burrowing owl would be avoided and minimized through implementation of the general measures identified in Table 4.2-1. In addition, the avian-specific measures contained in Table 4.3-3 would be implemented, and would provide broad protections for all avian species. The Applicant would comply with Avian Power Line Interaction Committee (APLIC 2012) guidelines for preventing avian electrocutions from and collisions with overhead power lines to avoid and minimize impacts to burrowing owl and other avian species.

Other Raptors and Migratory Birds

Potential direct impacts to other raptor species and migratory birds protected by the MBTA include removal of nesting and/or foraging habitat during construction of the proposed project. Alternative 3 would result in approximately 3.2 acres of permanent direct impacts and approximately 73.1 acres of temporary direct impacts to suitable raptor and migratory bird habitat (Table 4.2-2). Permanent and temporary direct impacts to suitable raptor and migratory bird habitat under Alternative 3 would be greater than those expected under Alternative 2. The degree of impact on individual raptor and migratory bird species would vary depending on species-specific behaviors in the project area and habitat requirements. Potential impacts to raptor and migratory bird nest sites would be more detrimental relative to impacts to foraging habitat for such species. Direct impacts to tree or cliff raptor nest sites are not expected given that these features are generally absent from the project area; however, nest sites for ground-nesting raptors may be directly impacted during construction of Alternative 3.

Potential direct impacts to other raptor species and migratory birds also include potential injury or mortality. Injury or mortality may occur during construction if individuals are struck by

equipment or vehicles. Injury or mortality to avian species resulting from construction most frequently occurs during vegetation clearing and involves eggs, nestlings, and recently fledged young that cannot safely avoid equipment. Injury or mortality may also result from collisions with or electrocution from overhead transmission wires. Avian power line collisions are a widespread problem with potentially significant local impacts when high-risk conditions are present (CEC 2002). The level of risk depends on a combination of biological and physical factors such as weather, design and placement of transmission structures, and species-specific behavior.

Potential indirect impacts to raptors and migratory birds include increased noise levels, human use and the potential for long-term unauthorized trespass, erosion, sedimentation, storm water contaminant runoff, and risk of fire, as well as the potential introduction and proliferation of invasive nonnative plant species. These indirect impacts have the potential to degrade raptor and migratory bird habitat, and alter breeding, foraging, and migratory behaviors.

Potential direct and indirect impacts to other raptors and migratory birds would be avoided and minimized through implementation of the general measures identified in Table 4.2-1. In addition, the avian-specific measures contained in Table 4.3-3 would be implemented, and would provide broad protections for all avian species. The Applicant would comply with Avian Power Line Interaction Committee (APLIC 2012) guidelines for preventing avian electrocutions from and collisions with overhead power lines to avoid and minimize impacts.

American Badger

Construction activities (i.e., vegetation removal and grading) associated with Alternative 3 would result in permanent and temporary direct impacts to suitable American badger habitat. The entire project area was determined to support suitable American badger habitat; therefore, it is assumed that all areas impacted by Alternative 3 support suitable American badger habitat. Alternative 3 would result in approximately 3.2 acres of permanent direct impacts and approximately 73.1 acres of temporary direct impacts to suitable American badger habitat (Table 4.2-2). Permanent and temporary direct impacts to suitable American badger habitat under Alternative 3 would be greater than those expected under Alternative 2.

An American badger was observed in a burrow west of SR-14 in 2011, and three dens were observed in the project area and immediate vicinity. Potential direct impacts during construction, operation, and decommissioning of the project may include disturbance, injury, or mortality of American badger individuals. Disturbance, injury, or mortality may result from individuals becoming trapped within open trenches, individuals being crushed or buried in their burrows/dens, noise or vibrations from heavy equipment, increased human presence/activity, vehicle strikes, and encounters with pets belonging to visitors.

Indirect effects to American badger could result from potential introduction of invasive plants or from increased incidence of accidental wildfires (caused by equipment or downed lines), both of which could reduce habitat quality for American badger. Potential deposition of sediment loads during heavy rain events and flooding downstream could potentially affect existing burrows/dens in the project area.

Potential direct and indirect impacts to American badger would be avoided and minimized through implementation of the general measures identified in Table 4.2-1.

Wildlife Corridors

The project area does not lie within a wildlife connectivity area as identified by the California Essential Habitat Connectivity Project (Spencer et al. 2010). However, at the local level, wildlife species are likely to use the project area and surrounding large expanses of open habitat for movement related to dispersal and home range activities. In addition, the proposed project is located within the Pacific Flyway, a major north/south migration route for birds that travel between North and South America.

Construction of Alternative 3 would not result in the permanent or temporary installation of structures that would prevent wildlife (including terrestrial and avian) movement through the project area. In addition, use of the service road during construction, operation, and decommissioning of Alternative 3 would be low and would not prohibit terrestrial wildlife movement between large patches of habitat. Therefore, direct impacts to wildlife corridors resulting from Alternative 3 are not expected.

Indirect impacts to wildlife movement (terrestrial and avian) may result during construction, operation, and decommissioning of Alternative 3 from increased human presence, noise, and edge effects associated with development. These indirect impacts may result in avoidance of the project area and may have harmful effects on individuals. These impacts may vary depending on the population structure, size of the home range, migration patterns, and dispersal movements of the species being considered, as well as the species' behavioral response to noise, degraded surrounding habitat, and other anthropogenic influences. Indirect impacts to wildlife movement following construction would be minimal given that human presence and activity during O&M of Alternative 3 would be minimal and infrequent.

Potential indirect impacts to wildlife movement would be avoided and minimized through implementation of the general measures identified in Table 4.2-1.

4.3.4 Alternative 4 (Solar Facility and Private Lands Gen-Tie Alignment)

Direct and Indirect Impacts

Solar Facility Site

Since the solar facility site would be constructed in an identical manner for all of the action alternatives, impacts from implementation of the Alternative 4 solar facility would be identical to those described above for the Alternative 2 solar facility.

Private Lands Gen-Tie

Under Alternative 4, the Applicant would seek desert tortoise incidental take coverage for construction and operation of the solar facility and a gen-tie line alignment located entirely on private land. The solar facility would be constructed on the same 500 acres within the 500-acre parcel as described for Alternatives 2 and 3. The gen-tie line would be constructed within a 3.6-mile-long ROW extending eastward from the southeast corner of the solar facility, across SR-14, and north to the existing LADWP Barren Ridge Switching Station (see Figure 1-4).

Generally, direct impacts to wildlife resources resulting from this alternative would be similar, but of greater magnitude and intensity, relative to those described for Alternative 3. Construction of Alternative 3 would result in up to approximately 507 acres of long-term direct impacts to suitable habitat for special-status wildlife species, including each of the species addressed under Alternative 2 (i.e., 500 acres within the solar facility site plus 7 acres within the private land gen-tie line ROW; see Table 4.2-2). In addition, this alternative would require up to approximately 126 acres of temporary impacts to suitable habitat for special-status wildlife species (see Table 4.2-2). Temporary impacts would allow for construction of the gen-tie line. Temporary impact areas would be allowed to return to natural conditions following gen-tie line construction; however, given the sensitivity of desert landscapes to ground disturbance, recovery to natural conditions could require several decades. Thus, temporary impacts are considered long term or permanent for the purposes of this analysis. The total disturbance area associated with Alternative 4 would be approximately 633 acres (compared to approximately 507 acres under Alternatives 2 and 3). In addition, the potential for construction and operation activities to result in the direct injury or death of special-status wildlife is greater under Alternative 4 relative to Alternatives 2 and 3 given the larger area of disturbance.

The gen-tie line would pose a collision and electrocution risk to special-status avian species occurring within the project area and vicinity. Avian power line collisions are a widespread problem with potentially significant local impacts when high-risk conditions are present (CEC 2002). The level of risk depends on a combination of biological and physical factors, such as weather, design and placement of transmission structures, and species-specific behavior.

Indirect impacts to wildlife resources resulting from Alternative 4 would also be similar to those described for Alternatives 2 and 3. However, given the larger disturbance area, the magnitude

and intensity of indirect impacts are expected to be greater under this alternative relative to Alternatives 2 and 3.

Potential direct and indirect impacts to wildlife resources under this alternative would be avoided and minimized through implementation of the measures outlined in Tables 4.2-1 (General Measures), 4.3-1 (Desert Tortoise Measures), and 4.3-2 (Mohave Ground Squirrel Measures). In addition, Table 2-9 identifies additional measures (including general and desert tortoise measures) that would be implemented to minimize impacts to wildlife resources within the gen-tie line ROW. Impacts to avian species (including migratory birds, burrowing owl, and other raptor species) would be avoided and minimized through implementation of measures as set forth in the Avian Power Line Interaction Committee guidelines (APLIC 2012) for preventing electrocutions and collisions. Permanent and temporary (long-term) impacts to suitable habitat for federally and State-listed species would be mitigated in a similar manner as described for Alternative 2 (i.e., acquiring and conserving off-site habitat in accordance with ITP conditions under the ESA and CESA).

4.4 Climate Change

The methodology to assess impacts to climate change under NEPA continues to evolve as consensus forms as to how best to evaluate such effects at project-specific and cumulative levels. CEQ published draft guidance on February 18, 2010 (CEQ 2010) for Federal agencies to improve their consideration of the effects of GHG emissions and climate change in their evaluation of proposals for Federal actions under NEPA. This direction proposed that agencies consider the direct and indirect GHG emissions from the action, and to quantify and disclose those emissions in the environmental document (40 CFR 1508.25). CEQ further proposed that agencies consider mitigation measures to reduce project-related GHG emissions from all phases and elements of the proposed action and alternatives over its/their expected life, subject to reasonable limits based on feasibility and practicality.

CEQ proposed that if a proposed action would be reasonably anticipated to cause direct emissions of 25,000 metric tons or more of carbon-dioxide-equivalent (CO₂e) GHG emissions on an annual basis, agencies should consider this an indicator that a quantitative and qualitative assessment may be meaningful to decision makers and the public. Although the guidance remains in draft form (CEQ 2010), this indicator of 25,000 metric tons or more of CO₂e GHG emissions on an annual basis can still serve as a useful benchmark against which to compare a proposed action's expected GHG emissions.

4.4.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described for Alternatives 2, 3, or 4 would occur.

Under Alternative 1, it is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as “Resource Management” lands, and are zoned as “A FP” (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.4.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

An analysis was performed to calculate the GHG emissions associated with the proposed project (Rincon Consultants 2014). The analysis combined the construction and operational GHG emissions for both the private lands solar facility and the proposed gen-tie line. The analysis considered direct GHG emissions from vehicle and equipment exhaust, and also considered indirect GHG emissions resulting from water delivery and use. GHG emissions during construction were estimated to be 2,426 metric tons of CO₂e. Operational GHG emissions were estimated to be 1,134 metric tons of CO₂e, for a total GHG emissions quantity of 3,560 metric tons CO₂e. This total includes GHG emissions for construction and operation of both the private lands solar facility and a gen-tie line. The overall GHG emissions quantity of 3,560 metric tons CO₂e would be well below the CEQ indicator of 25,000 metric tons of CO₂e per year.

Agencies under the Department of the Interior are required to consider potential impact areas associated with climate change, including potential changes in flood risk, water supply, sea level rise, wildlife habitat and migratory patterns, invasion of exotic species, and potential increases in wildfires. The extremely low GHG emissions associated with development of the project would result in no effect to any of these categories of potential impact. In addition, since the proposed solar facility would presumably offset GHG emissions created by electricity generation from

fossil fuel sources (i.e., coal, oil, natural gas), the net impact of the project would be positive with respect to overall GHG reductions.

4.5 Cultural, Historic, and Paleontological Resources

4.5.1 Cultural and Historic Resources

Identified cultural resources within the APE were assessed for eligibility for inclusion in the NRHP. To be eligible for the NRHP, a resource must be significant at the local, State, or national level under one or more of the following four criteria:

- A. Associated with events that have made a significant contribution to the broad patterns of our history;
- B. Associated with the lives of persons significant in our past;
- C. Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; and/or
- D. Have yielded, or may be likely to yield, information important in prehistory or history.

To qualify for the NRHP, resources must also retain integrity. As defined by the Advisory Council on Historic Preservation, integrity is the ability of a property to convey its significance through physical features and context, including location, design, setting, materials, workmanship, feeling, and association (ACHP 2009).

Resources eligible for the NRHP are considered historic properties. Under Section 106 of the National Historic Preservation Act (NHPA), actions that alter any of the characteristics that qualify a property for eligibility to the NRHP “in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association” (36 CFR Section 800.5[a]) constitute an adverse effect to the historic property.

Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant’s HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as “Resource Management” lands, and are zoned as “A FP” (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop

production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described for the action alternatives.

Alternatives 2, 3, and 4

Direct and Indirect Impacts

Under Alternative 2, the solar facility would be constructed and operated on approximately 500 acres of private land, and a gen-tie line on Federal lands would also be constructed. Under Alternative 3, the solar facility would be constructed in an identical manner and a gen-tie line on Federal lands would also be constructed, but using an alternative alignment. Under Alternative 4, the solar facility would be constructed in an identical manner to Alternatives 2 and 3, but an all-private-lands gen-tie line would be constructed and no Federal lands would be used. Because there are no historic properties present within the APEs for any of the action alternatives, as discussed further below, the effects of implementing these alternatives would be similar, regardless of which is implemented. Therefore, the analysis of effects to cultural resources is considered to be generally the same for all of the action alternatives.

The cultural resources investigations identified 23 archaeological sites and 33 isolated finds within the combined APEs for Alternatives 2, 3, and 4. Based on the results of the field survey and research, none of the archaeological sites located within the project area meet the eligibility criteria for inclusion in the NRHP. The isolated finds are, by definition, not sites, and are not eligible for inclusion in the NRHP. Because none of the identified resources are NRHP-eligible, they are not historic properties under Section 106 of the NHPA.

Table 4.5-1 summarizes the findings and resource eligibility recommendations for each of the 23 archaeological sites within the project APE. Table 4.5-1 also lists the potential effect to these resources as a result of the implementation of Alternatives 2, 3, and 4. These data are presented in detail in the Cultural Resources Inventory Report (confidential Appendix E).

Table 4.5-1. Summary of Potential Effects to Identified Archaeological Sites in the APE				
Site	Age	Description	NRHP Eligibility Recommendation	Potential Effects
P-15-007766	Historic	Refuse disposal scatter; prehistoric isolate	Not eligible	No adverse effect
P-15-016275	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-001	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-002	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-003	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-004	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-005	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-006	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-008	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-012	Historic	Refuse disposal scatter	Not eligible	No adverse effect
CS-S-H-016	Historic	Refuse disposal scatter	Not eligible	No adverse effect
CS-S-H-017	Historic	Refuse disposal scatter	Not eligible	No adverse effect
CS-S-H-020	Historic	Refuse scatter; prehistoric isolate	Not eligible	No adverse effect
CS-S-H-021	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-022	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-023	Historic	Prospect pit	Not eligible	No adverse effect
CS-S-H-024	Historic	Refuse scatter	Not eligible	No adverse effect
CS-S-H-027	Historic	Road	Not eligible	No adverse effect
CS-S-H-028	Historic	Road	Not eligible	No adverse effect
CS-S-P-010	Prehistoric	Lithic scatter	Not eligible	No adverse effect
CS-S-P-011	Prehistoric	Lithic scatter	Not eligible	No adverse effect
CS-S-P-013	Prehistoric	Lithic scatter	Not eligible	No adverse effect
CS-S-P-015	Prehistoric	Lithic scatter	Not eligible	No adverse effect

APE = area of potential effects

NRHP = National Register of Historic Places

As shown in Table 4.5-1, there are no NRHP-eligible historic properties present within the project APE. As such, there would be no adverse effect to NRHP-eligible resources as a result of implementation of Alternative 2, 3, or 4.

4.5.2 Paleontological Resources

Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described for Alternatives 2, 3, and 4 would occur.

Under Alternative 1, it is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include

crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

Alternatives 2, 3, and 4

Direct and Indirect Impacts

The geologic formations potentially impacted by any of the three action alternatives are the same. The structural foundation footings for the gen-tie line transmission structures would be up to 30 feet in depth.

Potential fossil-bearing strata in the project area are limited to the older Quaternary alluvium that underlays the younger Quaternary alluvium that overlays much of the project area. The depth beneath the surface of the older strata varies and cannot be precisely known without subsurface testing. Therefore, there is some potential that older Quaternary alluvium deposit could be encountered during installation of some of the project components, particularly some of the gen-tie line structural foundation footings.

The 2011 Draft EIR (Kern County Planning and Community Development Department 2011a) prescribed measures to mitigate these potential effects to paleontological resources. The measures prescribe a monitoring program and a curation protocol if resources are found during monitoring. Those same measures would be implemented during the installation for all of the action alternatives. The mitigation plan would include the following:

- The treatments recommended for the area of the proposed disturbance
- The level of monitoring required
- The qualifications and types of field personnel

- The methods of fossil and data recovery
- The post-field treatment of recovered paleontological resources
- The designated specimen repository
- The format of the final mitigation report

Implementation of described protocols would mitigate impacts to paleontological resources during the project's construction. Since subsequent ground-disturbing activities would not occur during operation of the project, potential impacts would be limited to the construction phase, and continued mitigation and monitoring would not be required during the project's operational phase.

Decommissioning activities could require excavations within sensitive strata for foundation removal. If this is the case, an approved monitoring and discovery treatment plan would be implemented to mitigate potential effects.

4.6 Energy Resources

4.6.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

Under Alternative 1, it is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

The public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term,

future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.6.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

Each of the action alternatives would result in the construction of the solar facility, which would be consistent with recently adopted Federal mandates concerning the increased development of renewable energy sources. The gen-tie line alternatives would each facilitate the transmission of solar-generated electricity to the Barren Ridge Switching Station and then on to the electric grid.

The project area is located immediately adjacent to Federal lands that have been designated as an energy corridor. The corridor was established, in part, to expedite applications to construct or modify electricity transmission and distribution facilities within such corridors. Even though the proposed solar facility would be located on private lands, as would the Alternative 4 gen-tie line alignment, the project area's location adjacent to the designated corridor makes the project's construction and operation more appropriate than would otherwise be the case. The project would be consistent with adopted Federal goals and policies associated with the increased production and transmission of renewable energy resources.

4.7 Fire and Fuels

4.7.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

Under Alternative 1, it is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.7.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

Perennial vegetation in the project area is sparse and widely spaced, which, under current conditions, generally serves to limit the amount of permanent fuel available to wildfires. Trees are absent from the project area, and vegetation is restricted to shrubs and small perennial plants. Distribution of invasive species such as Sahara mustard is currently limited to a few small areas near SR-14. Fires in and around the project area are currently infrequent and are typically of limited extent. An increase in the distribution of Sahara mustard and other invasive plant species probably presents the greatest risk with respect to increased frequency and intensity of wildfire. Once established, these plants can seasonally increase fire risk by adding fuel that can serve to carry fire over greater distances. Unless properly managed, the spread of these species can be increased by ground disturbance and other human-caused factors.

During construction, activities would be implemented to minimize distribution of invasive plants. These efforts are described in Section 2.4.4. During operation, invasive species and other weeds would be managed through mechanical and chemical controls. These efforts are described in Section 2.3.7. These activities would serve to limit the increased distribution of invasive plants and weeds that could more effectively carry fire. Safety and emergency management plans and programs would also be established. These activities would prescribe methods by which fire risk could be minimized, and would also prescribe actions to be taken in the event of fire. Based on each of these factors, no adverse effects with respect to fire and fuels would occur.

4.8 Hazardous and Solid Wastes

4.8.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

Under Alternative 1, it is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include

crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.8.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

The proposed project is not expected to result in impacts from hazards and hazardous materials with respect to creating a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. This is because the proposed project would not involve the routine transport, use, or disposal of hazardous materials as defined by the Hazardous Materials Transportation Uniform Safety Act. During construction, the proposed project would include the transport of general construction materials (e.g., concrete, wood, metal, vehicle fuel). Project-related infrastructure would not emit hazardous materials or be constructed of acutely hazardous materials or substances that could adversely impact the public or on-site workers.

Wastes to be generated during construction of the proposed project would also be non-hazardous, and would consist of copper wire, scrap steel and wood, common trash, and wire spools.

Although field equipment used during construction activities could contain various hazardous materials (e.g., hydraulic oil, diesel fuel, grease, lubricants, solvents, adhesives, paints), these materials are not considered to be acutely hazardous and would be used in accordance with the manufacturers' specifications and all applicable regulations. In addition, hazardous fuels and lubricants used on field equipment would be subject to a Material Disposal and Solid Waste Management Plan, and a Spill Response Plan, as described previously in Section 2.4.4.

Dust palliatives would be used during construction to manage fugitive dust. The primary environmental concern with dust palliatives is how they could impact water quality; freshwater aquatic environments; and, to a lesser extent, plants (USFS 1999). If improperly applied, palliatives can migrate into water bodies with resultant negative effects. Although the arid nature

of the project area would limit the effects of improper application of dust palliatives on groundwater and the aquatic environments, runoff of palliatives could occur if they were applied improperly prior to a significant rainfall event. However, these effects can be avoided if safety precautions are implemented and manufacturer's instructions are followed when handling, mixing, and applying dust palliatives. These precautions would be primarily directed toward excess application of palliatives or application of palliatives outside of areas for which they are intended. Mitigation would be employed to implement these precautions during construction:

- Information concerning dust palliatives applied at the site will be kept at the project site during construction. This information may include product literature, Material Safety Data Sheets, and manufacturers' instructions. Persons applying the palliatives must be familiar with this information and must comply with the instructions contained therein.
- An appropriate person will be appointed to oversee all palliative applications. This person will be familiar with all of the instructions and requirements concerning the application of palliatives, and will direct the application thereof. Particular attention will be paid to ensuring that palliatives are applied only in the quantities necessary to accomplish the desired dust reduction. Attention will also be paid to ensuring that application of palliatives is limited only to those areas where they are required. A log will be kept of all palliative applications, and this log will be maintained on-site with the aforementioned product information materials.

Supplemental Analysis for Herbicide Use

Alternatives 2, 3, and 4

During operation of the Alternative 2, 3, or 4 gen-tie lines, invasive weeds would be managed through the use of herbicides, as per the weed management approach described in Section 2.5.4. The herbicides used would be approved for their specific purposes and would be transported, handled, stored, and applied in accordance with applicable regulations and applicable standard operating procedures (SOPs) contained in BLM's 2007 Programmatic Environmental Impact Statement (PEIS) for Vegetation Management Using Herbicides. The PEIS evaluated the environmental effects of herbicide use, and was the subject of a Biological Assessment (BA) prepared by the BLM. A Biological Opinion was issued for the proposed vegetation management plan by USFWS. Any herbicide use conducted for any of the action alternatives would follow the same protocols and mitigations as that prescribed in the PEIS and BA. Since those protocols and mitigations have already been reviewed and approved by USFWS, the PEIS's analysis and findings are also applicable to the action alternatives and have been integrated into this analysis.

Table 4.8-1 identifies specific resource areas that could have potential adverse impacts as a result of herbicide use for invasive weed management. The table includes a rationale as to why a resource area was included or excluded from hazardous materials impact analysis related to

herbicide use. Resource areas identified for further analysis are analyzed for each alternative in narrative form following the table. The herbicide analysis is tiered to BLM's 2007 PEIS for vegetation management using herbicides.

Table 4.8-1. Potential Impacts of Herbicide Use by Resource Area		
Resource/Concern	Analyzed in Detail Below?	Rationale for Analysis or Dismissal from Analysis
Air Quality	No	<p>Only herbicides included in the Vegetation Treatment Programmatic Environmental Impact Statement (PEIS) (BLM 2007) would be used. The Vegetation Treatment PEIS Record of Decision (ROD) identified standard operating procedures (SOPs) for air quality. In addition, the PEIS Appendix B, Table B-2, identifies SOPs for air quality (p. B-10).</p> <p>Use of nonregulated herbicides would not be used. In compliance with U.S. Environmental Protection Agency label instructions, application of herbicides would be suspended when wind velocity exceeds 6 miles per hour (mph) during application of liquids or 15 mph during application of granular herbicides.</p>
Biological Resources – Vegetation	Yes	<p>The project-specific Biological Assessment (AECOM 2013) concluded that no threatened and endangered (T&E) vegetation species were on-site. Previous grading within the project area would eliminate habitat for special-status plants. However, vegetation recovery may occur within temporarily impacted areas along the transmission line corridor.</p> <p>A weed management approach was prepared in compliance with the Vegetation Treatment PEIS and includes measures to avoid chemical drift and residual toxicity. The purpose of the weed management plan is to control invasive plant species that may affect native vegetation.</p> <p>The 2007 Vegetation Treatment PEIS evaluated the potential adverse effects of herbicide use on vegetation, special-status species, and T&E species. Mitigation measures were identified in the Vegetation Treatment PEIS ROD (p. 2-4).</p> <p>The PEIS Appendix B, Table B-2, identifies SOPs for vegetation (p. B-10), but they are applicable to re-vegetation sites or to domestic horses, pack animals, and livestock.</p> <p>The project would include the use of herbicides to prevent the introduction of new weeds and the spread of existing weeds because of project construction, operation, and decommissioning.</p> <p>The 2007 Vegetation Treatment PEIS analyzed the use of herbicide application on Bureau of Land Management (BLM)-administered land to control invasive species. Mitigation measures, SOPs, and prevention measures from the Vegetation Treatment PEIS are contained in the Vegetation Treatment PEIS ROD (Table 2) and Appendix B</p>

Table 4.8-1. Potential Impacts of Herbicide Use by Resource Area		
Resource/Concern	Analyzed in Detail Below?	Rationale for Analysis or Dismissal from Analysis
		(Table B-2). Applicable measures would be implemented as appropriate when applying herbicide within the project area.
Biological Resources – Wildlife	Yes	<p>There are federally listed desert tortoises within the project area, so wildlife is discussed in more detail below.</p> <p>Previous grading within the project area would eliminate habitat for special-status animals. Biological monitoring on-site would identify special-status species, if present, and identify actions for avoidance.</p> <p>A Habitat Conservation Plan (AECOM 2014g) was prepared for the project that contains impact avoidance, minimization, and mitigation measures, as well as resource-specific measures and general and construction measures, which include implementation of weed management measures.</p> <p>Mitigation measures were identified in the Vegetation Treatment PEIS ROD (p. 2-4 through 2-5).</p> <p>The PEIS Appendix B, Table B-2 (p. B-11) identifies SOPs for wildlife and threatened, endangered, and sensitive species.</p>
Climate Change	No	<p>The extremely low greenhouse gas (GHG) emissions associated with development of the project, including the use of herbicide, would not result in direct emissions of 25,000 metric tons or more of carbon dioxide-equivalent on an annual basis.</p> <p>Because the climate change impacts of all of the alternatives are minimal, no mitigation would be necessary to specifically reduce GHG emissions associated with the use of herbicide.</p>
Cultural Resources	No	<p>A cultural resources analysis was prepared for the project and mitigation measures were developed to require data recovery at eligible sites prior to construction-related ground disturbance activities.</p> <p>Mitigation measures were also identified (p. 2-5) in the Vegetation Treatment PEIS ROD. Appendix B, Table B-2 identifies SOPs for cultural resources (p. B-12); applicable measures would be implemented.</p>
Energy Resources	No	Herbicide use allows an effective method of weed control at energy facilities to allow the production and transmission of renewable energy supplies. The Vegetation Treatment PEIS contains mitigation measures and SOPs to ensure the proper use of chemicals, methods, rates, and treatment. This project would comply with these applicable requirements.
Lands and Realty	No	The use of herbicide would not have an adverse effect on lands and realty, and would not change the analysis.

Table 4.8-1. Potential Impacts of Herbicide Use by Resource Area

Resource/Concern	Analyzed in Detail Below?	Rationale for Analysis or Dismissal from Analysis
Noise and Vibration	No	The closest sensitive receptor to the project area is approximately 2 miles away. Noise and vibration impacts from herbicide application would be limited to noise generated from vehicles carrying workers and/or applying the chemicals. These noise and vibration impacts would be negligible, and would not affect sensitive receptors.
Paleontological Resources	No	<p>The Vegetation Treatment PEIS analyzed potential paleontological resource impacts associated with the application of herbicides (pg. 4-148).</p> <p>Mitigation measures and SOPs were identified in the Vegetation Treatment PEIS (pgs. 2-42 and 4-152) for paleontological resources.</p> <p>Impacts to paleontological resources would not be expected as a result of herbicide application, because no ground disturbance or subsurface disturbance would occur and no impacts would occur outside of areas already impacted and mitigated for by the SRPL.</p> <p>Application of herbicides would not result in any impacts to paleontological resources.</p>
Public Health and Safety	No	The Vegetation Treatment PEIS identified SOPs for human health and safety (Appendix B, pg. B-14). Herbicide application would be applied consistent with applicable SOPs and appropriate State and local regulations. All herbicide application would be conducted under the direct supervision of a licensed applicator.
Recreation	No	<p>The project area is not part of a designated recreation area; however, off-highway-vehicle riding, primitive camping, hiking, hunting, and other outdoor pursuits could occur.</p> <p>The Vegetation Treatment PEIS provided analysis of potential recreational impacts associated with the application of herbicides (pgs. 4-159 through 4-163). Applications would be localized and would occur in compliance with the applicable SOPs defined in the Vegetation Treatment ROD (Appendix B, Table 2; p. 2-5). Mitigation measures are also identified in the Vegetation Treatment PEIS (pgs. 2-42 and 4-164).</p>
Socio-Economics and Environmental Justice	No	<p>Persons living within the project area can be considered part of an environmental justice population; however, the closest residence is approximately 2 miles from the nearest portion of the project area. The local population has also been given an opportunity to review and comment on the project during the prior California Environmental Quality Act process, and is also provided the opportunity to review and comment on the project during the National Environmental Policy Act process.</p> <p>Given the selection of a non-regulated herbicide, the targeted application of herbicides directly on specific plants (no</p>

Table 4.8-1. Potential Impacts of Herbicide Use by Resource Area		
Resource/Concern	Analyzed in Detail Below?	Rationale for Analysis or Dismissal from Analysis
		<p>broadcast treatment), the low expected frequency of application, and the implementation of SOPs and measures to minimize risk to public health and safety (see above), no adverse effects are anticipated.</p> <p>In addition, the project would be constructed in accordance with all Federal, State, and local plans and policies associated with utilities, thereby reducing potential adverse effects.</p>
Topography, Geology, and Soils	No	No mitigation measures were identified in the Vegetation Treatment PEIS ROD. Appendix B, Table B-2 (p. B-10) identifies SOPs for soils.
Transportation and Public Access	No	<p>The Vegetation Treatment PEIS analyzed exhaust emissions from transportation vehicles (pgs. 4-6 through 4-8). SOPs for emissions are contained in PEIS Appendix B.</p> <p>The Vegetation Treatment PEIS also analyzed impacts of application of herbicides on public access. SOPs were also prepared (pg. 4-164) and applicable measures would be implemented as appropriate when applying herbicide within the project area.</p>
Visual Resources	No	The Vegetation Treatment PEIS analyzed the visual impact due to the use of herbicide application on BLM administered lands. Mitigation measures, SOPs, and prevention measures from the Vegetation Treatment PEIS are contained in the Vegetation Treatment PEIS ROD (Table 2) and PEIS Appendix B (Table B-2). Applicable measures would be implemented as appropriate when applying herbicide within the project area.
Water Resources	No	<p>There are no permanent bodies of water located on the project site, only an ephemeral dry wash. No aquatic or riparian vegetation would be impacted.</p> <p>Mitigation measures were identified in the Vegetation Treatment PEIS ROD (p. 2-4).</p> <p>Appendix B, Table B-2 (p. B-10) of the Vegetation Treatment PEIS identifies SOPs for water resources, and applicable measures would be implemented.</p> <p>Pine Tree Canyon Wash would be crossed by the Alternative 3 gen-tie line, but is considered a “geographically isolated” aquatic feature, and, thus, non-jurisdictional waters of the U.S. by the U.S. Army Corps of Engineers (USACE). However, the wash is considered jurisdictional waters of the State under the regulatory administration of the California Department of Fish and Wildlife and the Lahontan Regional Water Quality Control Board.</p> <p>Mitigation measures were identified in the Vegetation Treatment PEIS ROD (p. 2-4).</p>

Table 4.8-1. Potential Impacts of Herbicide Use by Resource Area		
Resource/Concern	Analyzed in Detail Below?	Rationale for Analysis or Dismissal from Analysis
		<p>PEIS Appendix B, Table B-2 (p. B-10) identifies SOPs for wetlands/riparian zones.</p> <p>No other wetlands or other water resources under the jurisdiction of USACE are present within the project area.</p> <p>Pine Tree Canyon Wash is a Federal Emergency Management Agency-designated Flood Zone “A,” and would be crossed by the Alternative 3 gen-tie line alignment. The remainder of the gen-tie line would be in a moderate flood hazard area Zone X. No transmission structures or new service road segments would be constructed within the wash. With the lack of disturbance to wash features, it is not anticipated that the project would contribute to increased weed populations, and is not expected that herbicides would be used within drainages. Should treatment within the drainages need to occur, an herbicide would be selected that is approved for use in aquatic habitats (e.g., AquaMaster, a glyphosate compound).</p>
Source: BLM 2007		

Biological Resources – Vegetation

As stated in Section 3.3.1, five vegetation classifications occur within the project area:

- Mojave creosote bush scrub
- Desert saltbush scrub
- Unvegetated ephemeral dry wash
- Southern alluvial fan scrub
- Creosote bush wash scrub

No State or federally threatened or endangered plant species have been identified within the project area.

Alternative 1 (No Action Alternative)

Under the No Action Alternative, no herbicide use would occur and invasive plants could eventually increase in the project area, particularly along traveled roads. Existing or new invasive plant infestations within or adjacent to the project area could spread throughout the area, which would be an adverse effect.

Alternatives 2, 3, and 4

Invasive weeds identified within or outside of the project area could become established or increase within the area in the short-term following construction activities that remove native vegetation. However, the weed management approach described above (see Section 2.2.7)

identifies techniques for infestation containment and control, including manual, mechanical, and chemical removal. These techniques would be effective in controlling noxious and invasive broadleaf weeds.

Another way that new species could be introduced to the area would be from vehicles, heavy equipment, and activities associated with the use of the vehicles and equipment. Preventive measures such as equipment cleaning, site soil management, using weed-free products, and facility staff training would reduce the risk of invasive species establishment.

In addition to the containment, control, and preventive techniques, monitoring and reporting of weed control measures would assess the effectiveness of the weed control approach, and methods could be modified if necessary. The invasive plant control measures are intended to be adaptive to address new threats as they occur and to respond to current conditions through time.

The use of herbicides would facilitate the effective control of noxious weeds and other invasive and undesirable species. Chemical treatment of invasive plants as part of an integrated pest management approach (manual [e.g., hand-pulling], mechanical, and chemical control) is not expected to have negative effects on special-status plant species. No threatened or endangered plants were identified in the project area.

According to the Vegetation Treatment PEIS (BLM 2007), the potential for negative effects to vegetation from drift is low, with a maximum drift distance for proposed active ingredients identified as 1,100 feet for sulfometuron methyl if applied by a low boom (20 inches above the ground). However, this active ingredient and type of broadcast application is not proposed for the project. The Vegetation Treatment PEIS also found that impacts from targeted applications (i.e., backpack sprayers) for the proposed active ingredients (e.g., glyphosate and triclopyr) are expected to have little to no negative effects on off-site vegetation.

Chemicals proposed to control invasive species for the project are BLM-approved herbicides that were analyzed in the Vegetation Treatment PEIS BA. These herbicides include glyphosate and potentially triclopyr. Herbicides that represent the lowest risk for negative effects to sensitive species present on-site would be prioritized. Herbicide application would also consist of targeted applications of invasive plants within those treatment areas; therefore, only a portion of the total treatment area would be affected by herbicides.

Invasive plant treatment and control would occur, at minimum, annually, but could occur multiple times annually, as needed and recommended by the project's Pest Control Advisor to control various invasive plants that may be present during different times of the year. Only adjuvants and herbicides approved by BLM for use in California would be used. Herbicides kill or inhibit plant growth and can be very effective in controlling many invasive plants. Different invasive plant species may require alternate herbicides, application rates, and time of application. Application of herbicides would involve controlled applications and not broadcast treatments.

Chemical treatment with herbicides known to have residual toxicity, such as pre-emergents, may be used. To reduce potential indirect impacts associated with herbicide application, only the following application methods are anticipated to be used: wick (wiping onto leaves) and foliar spot spraying with backpack sprayers or pump sprayers at low pressure or with a shield attachment to control drift, and only on days with winds not exceeding 10 miles per hour, or with a squeeze bottle for small infestations.

The environmental risks of using herbicides would be minimized by using marker dyes to make the herbicide visible in areas where it has been applied. Marker dyes used would include Turf Marker Blue or an equivalent, and would not have toxic environmental effects independent from the associated herbicides. Higher visibility is desirable because it allows personnel to more effectively protect themselves against contamination; prevents unintended multiple application to a particular area or plant; ensures complete coverage of the target area and plants; and informs personnel of overspray and wind-drift issues, which protects non-target plants.

Implementation of the weed control approach (see Section 2.2.7) would facilitate the control of invasive plant and undesirable species. The project would implement applicable measures from the Vegetation Treatment BA and the SOPs included in the Vegetation Treatment PEIS (PEIS Appendix B, Table B-2), which would minimize or reduce adverse effects to sensitive vegetation communities. Therefore, the application of herbicides on lands associated with the project is not likely to adversely affect sensitive vegetation communities, including special-status plants, but would have an overall benefit to the habitat structure, improve habitat restoration efforts, and reduce fire risk.

Biological Resources – Wildlife

Wildlife present within the project area is typical of that found in Mojave creosote bush scrub habitat. Special-status species detected within the project area include the Federal and State listed desert tortoise, the State-listed Mohave ground squirrel, western burrowing owl, and American badger. However, following construction, limited to no native habitat for wildlife would be present within the areas targeted for invasive plant treatment, with the exception of potential buffer areas or temporarily impacted areas after vegetation recovers and/or restoration is complete.

The weed management approach identifies long-term maintenance measures (i.e., manual removal and herbicide application) to control weed species that were removed during construction and to prevent or control weed species that are not yet established but could potentially infest the project area in the future. Implementation of weed control measures, including the use of herbicides, is not expected to have an adverse effect on wildlife, per the analysis below.

Alternative 1 (No Action Alternative)

Under the No Action Alternative, no herbicide use would occur, and invasive plants would eventually increase into the project area, particularly along traveled roads. Existing or new invasive plant infestations within or adjacent to the project area could persist and potentially spread throughout the area, resulting in adverse impacts to native habitat composition, including associated wildlife habitat.

Alternatives 2, 3, and 4

Herbicides would only be applied using targeted methods (i.e., backpack sprayers or a spray rig with a hand-held wand method). No broadcast treatment methods would be employed. This targeted application reduces potential impacts associated with application of herbicides to non-target vegetation and wildlife. The herbicide treatment is proposed for use in areas that have been disturbed by the project and where vegetation will be maintained long-term within the project area. Since the habitat would have been removed in treatment areas, there is a substantially reduced potential for direct adverse effects to native plants and wildlife. The use of herbicides is also an important component of meeting the project's objective to control invasive plants and thereby minimize the potential for indirect adverse effects resulting from the introduction or spread of invasive plant species in the native environment. The most likely effect would be associated with the drift of herbicides into adjacent habitat.

Application of herbicide would be by certified operators using low-pressure sprayers at an application rate equal to or less than the manufacturer's recommendation. Standard procedures recommend using the lowest amount of herbicide to effectively treat the target species. In no instance would using the maximum rate of herbicide for direct use exceed the maximum allowable rate per acre. According to the Vegetation Treatment PEIS (BLM 2007), field studies suggest that appropriate herbicide use is not likely to have direct toxicological effects on wildlife.

Based on the analysis in the Vegetation Treatment PEIS (BLM 2007: pgs.4-118 through 4-123) and the Vegetation Treatment BA (Rincon Consultants 2011a: pgs. 2-7 through 2-22), which was based on ecological risk assessments for herbicide active ingredients, risks to wildlife (terrestrial) from invasive plant treatments using herbicides proposed for potential use on-site would be as follows:

- Triclopyr – Low to moderate risk from direct spray for most wildlife. No risk to moderate risk from consumption of contaminated vegetation or prey.
- Glyphosate – No risk to moderate risk from direct spray. No risk to moderate risk from consumption of contaminated vegetation or prey.

Other herbicides defined in the Vegetation Treatment PEIS also presented no to moderate risk. Because of the relatively low risk of toxicological effects to most wildlife even with direct spraying, the main risks to terrestrial wildlife from herbicide use are anticipated to be ingestion of contaminated vegetation or prey, and habitat modification. Given the targeted nature of chemical application techniques to be used on-site within the permanently and temporarily impacted areas, and the graded/disturbed nature of the anticipated permanently impacted areas, adverse direct and indirect effects are expected to be minimal and would be outweighed by the benefit of controlling the introduction and/or expansion of invasive species into native habitats.

More specific discussion regarding the three special-status wildlife species present within BLM lands in the project area is provided below. These discussions incorporate information from the BLM Vegetation Treatment PEIS/Record of Decision (ROD) and Vegetation Treatment BA related to impacts from the application of herbicides.

Reptiles

No new or more substantial impacts to reptiles are anticipated as a result of the project that were not analyzed in the programmatic assessment and documented in the BLM Vegetation Treatment PEIS/ROD or Vegetation Treatment BA. Implementation of applicable conservation measures for reptiles defined in the Vegetation Treatment BA, and the SOPs in the Vegetation Treatment PEIS would minimize the potential for negative effects associated with herbicide application. The project would also prioritize use of herbicide active ingredients and rates that present the lowest risk for negative effects in special-status species habitat. The application of herbicides on lands associated with the project is not likely to adversely affect reptiles.

Desert Tortoise

Two herbicides may be used to treat invasive plant populations in suitable tortoise habitat: glyphosate and triclopyr. Based on the assessment of amphibians and reptiles in the Vegetation Treatment PEIS and Vegetation Treatment BA, these herbicides are considered to have no to a moderate potential for impacts to terrestrial vertebrates from dermal contact, with the potential for a moderate risk only associated with glyphosate or triclopyr via direct spray at the maximum application rate. All other exposure pathways for direct contact (i.e., all herbicides via contact with sprayed vegetation) would have low to no risk potential. The Vegetation Treatment PEIS and Vegetation Treatment BA also analyzed desert tortoise specifically and identified potential negative effects from ingestion of food sprayed with glyphosate or triclopyr at the typical application rate. All of these risk assessments were based on conservative assumptions and are not expected to underestimate the risk.

To decrease the potential for negative impacts, herbicide application within desert tortoise habitat would primarily consist of glyphosate at the typical application rate and would consist of targeted treatment of individual weed plants. No broadcast treatment would occur.

There is very low potential for direct impacts to desert tortoise. Application of herbicides would occur after treatment areas are cleared for desert tortoise; therefore, the potential for direct spray is very low. Direct impacts would only occur if desert tortoise came in contact with treated vegetation. There is a low potential for indirect impacts resulting from drift or transport of herbicides in runoff; however, the treatment areas are expected to be very small and would be spread over different locations within the project area. Only targeted application methods would be used to treat invasive plants.

Birds

No new or more substantial impacts to birds are anticipated as a result of the project that were not analyzed in the programmatic assessment and documented in the BLM Vegetation Treatment PEIS/ROD and Vegetation Treatment BA. Implementation of applicable conservation measures for birds defined in the Vegetation Treatment BA and the mitigation measures and SOPs in the Vegetation Treatment PEIS/ROD would minimize the potential for negative effects associated with herbicide application. The project would also prioritize use of herbicide active ingredients and rates that present the lowest risk for negative effects in special-status species habitat. The application of herbicides on lands associated with the project is not likely to adversely affect birds.

Western Burrowing Owl

Two herbicides may be used to treat invasive plant populations in suitable western burrowing owl habitat: glyphosate and triclopyr. Based on the general assessment of birds in the Vegetation Treatment PEIS BA, these herbicides are considered to have no to moderate risk for negative effects from ingestion of food. There are no risks identified from ingestion of fish or small vertebrates, and a low risk from ingestion of invertebrates or vegetation sprayed with glyphosate or triclopyr at the typical application rate. There is a moderate risk of negative effects from ingestion of invertebrates exposed to glyphosate or triclopyr applied at the maximum application rate, a moderate risk of negative effects from vegetation sprayed with triclopyr at the maximum application rate, and a low risk of negative effects from ingestion of vegetation sprayed with glyphosate at the maximum application rate. All of these risk assessments were based on conservative assumptions and are not expected to underestimate the risk.

There is a low potential for direct and indirect impacts associated with herbicide applications. Herbicide application would consist of targeted applications of invasive plants and would not consist of broadcast applications; therefore, only a portion of the total project area would be affected by herbicides. Herbicides would not be applied in the immediate vicinity of a potentially occupied burrow. These areas would be treated by manual methods only.

Mammals

No new or more substantial impacts to mammals are anticipated as a result of the project that were not analyzed in the BLM Vegetation Treatment PEIS/ROD and Vegetation Treatment BA. Implementation of applicable conservation measures for mammals defined in the Vegetation Treatment BA and the mitigation measures and SOPs in the Vegetation Treatment PEIS/ROD would minimize the potential for negative effects associated with herbicide application. The project would also prioritize use of herbicide active ingredients and rates that present the lowest risk for negative effects in special-status species habitat. The application of herbicides on lands associated with the project is not likely to adversely affect mammals.

Mohave Ground Squirrel

Two herbicides may be used to treat invasive plant populations in suitable Mohave ground squirrel habitat: glyphosate and triclopyr. Based on the general assessment of small mammals in the Vegetation Treatment BA, these herbicides are considered to have no to moderate risk for negative effects from ingestion of food. There are no risks identified from ingestion of vegetation or small vertebrates at the typical application rate, and a low risk from ingestion of invertebrates at the typical application rate and ingestion of vegetation sprayed with glyphosate at the maximum application rate. There is a moderate risk of negative effects from ingestion of invertebrates exposed to glyphosate or triclopyr applied at the maximum application rate. All of these risk assessments were based on conservative assumptions and are not expected to underestimate the risk.

There is a low potential for direct and indirect impacts associated with herbicide applications. Herbicide application would consist of targeted applications of invasive plants and would not consist of broadcast applications; therefore, only a portion of the total project area would be affected by herbicides. Herbicides would not be applied in the immediate vicinity of a potentially occupied burrow. These areas would be treated by manual methods only.

American Badger

Two herbicides may be used to treat invasive plant populations in suitable American badger habitat: glyphosate and triclopyr. Based on the general assessment of large mammals in the Vegetation Treatment BA, these herbicides are considered to have no to moderate risk for negative effects from ingestion of food. There are no risks identified from ingestion of small vertebrates exposed to glyphosate, no risk from triclopyr at the typical application rate, and a low risk for ingestion of small vertebrates exposed to triclopyr at the maximum application rate. There is a low risk from ingestion of invertebrates or vegetation exposed to glyphosate or triclopyr at the typical application rate and a moderate risk of negative effects from ingestion of invertebrates or vegetation exposed to glyphosate or triclopyr applied at the maximum application rate. All of these risk assessments were based on conservative assumptions and are not expected to underestimate the risk.

There is a low potential for direct and indirect impacts associated with herbicide applications. Herbicide application would consist of targeted applications of invasive plants and would not consist of broadcast applications; therefore, only a portion of the total project area would be affected by herbicides. American badgers are also nocturnal animals, and treatment would occur during daylight hours; therefore, the potential for direct effects from direct spray are minimal. Areas would be surveyed for presence of wildlife and burrows before treatment. Herbicides would not be applied in the immediate vicinity of a potentially occupied burrow. These areas would be treated by manual methods only.

4.9 Land Use

4.9.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.9.2 Alternatives 2 and 3

Direct and Indirect Impacts

The public lands that could be crossed by the proposed Alternative 2 and Alternative 3 gen-tie line alignments have been classified by BLM's CDCA Plan (BLM 1980, 1999) as Multiple Use Class "L" or "Limited Use" lands. The Alternative 4 alignment would be located entirely on private lands, and would, therefore, not be subject to the CDCA Plan.

According to the CDCA Plan, Class L lands are to be managed to provide for generally lower-intensity, carefully controlled multiple use of resources, while ensuring that sensitive values are not significantly diminished. The CDCA Plan provides that new electric transmission facilities can be allowed within Class L lands if they are located within designated transmission corridors. The project area is included within a designated Energy Policy Act Section 368 Energy Corridor. The "23-106 Corridor" in the project area was designated in 2009. The corridor includes all of the BLM lands under consideration for Alternatives 2 and 3.

A 2008 PEIS prepared for the Federal west-wide energy corridors found that the 23-106 corridor's designation within the project area was consistent with the CDCA Plan. Accordingly, a plan amendment is not required for energy transmission projects proposed within the corridor.

4.9.3 Alternative 4

Direct and Indirect Impacts

The proposed solar facility and the Alternative 4 gen-tie line alignment would all be located on private lands, and, thus, under the land use jurisdiction of Kern County. The county approved the solar facility in 2011 and issued a conditional use permit for its construction and operation. According to Kern County's General Plan and the County Zoning Ordinance, the Alternative 4 gen-tie line alignment is an allowed use on the lands it would pass through. Accordingly, the project would be consistent with locally adopted land use guidelines.

Kern County's Zoning Ordinance also requires that DOD review proposals to construct structures that are taller than specified heights within certain zones. The project area lies within such a zone. The project Applicant has submitted its plans to DOD, and DOD has concurred that construction of the gen-tie line would create no impacts to the military mission. As such, construction of a gen-tie line on any other structure in exceedance of the specified heights would be consistent with Kern County's Zoning Ordinance.

4.10 Noise and Vibration

4.10.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as “Resource Management” lands, and are zoned as “A FP” (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.10.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

Construction noise and vibration would represent a short-term impact on ambient noise and vibration levels in the project area. Noise and vibration would be generated by equipment associated with construction of the solar facility and the gen-tie line, including power augers, cranes, trucks, and other equipment.

USEPA has compiled data regarding the noise-generating characteristics of specific types of construction equipment. Noise levels generated by heavy construction equipment at a distance of 50 feet can range from 60 dBA for a small tractor, up to 100 dBA for rock breakers. The equipment used for the construction of the project would include power augers or drills, a crane, material trucks, concrete trucks, and wire pulling and tensioning equipment that would generally generate noise in the range of 60 to 80 dBA. However, these noise levels diminish rapidly with distance from the construction site at a rate of approximately 6 dBA per doubling of distance. For example, a noise level of 87 dBA measured at 50 feet from the noise source would be reduced to 81 dBA at 100 feet from the source, and be further reduced to 75 dBA at 200 feet from the source.

Construction of the solar facility and the gen-tie line would take approximately 9 months. Construction activities for the proposed project would generally occur between 7 a.m. and 6 p.m., Monday through Friday. Additional hours could be necessary to make up schedule deficiencies or to complete critical construction activities. For instance, during extremely hot weather, it may be necessary to start work earlier in the morning or work later in the evening to avoid certain activities when ambient temperatures are high. All construction work, including any nighttime or weekend work, would comply with the Kern County Noise Ordinance.

All locations where construction would take place would be more than 10,000 feet (nearly 2 miles) from any occupied properties. At 3,000 feet, normal construction noise levels would measure approximately 40 to 45 dBA, which would result in a negligible noise increase. Any vibration produced from construction activities would not be perceptible at those distances. Therefore, due to the spatial separation of the construction activities from sensitive receptors, the noise and vibration generated during construction would not be distinguishable, and impacts would be negligible.

Noise and vibration generated during decommissioning of the project's components would be similar to that generated during construction. Compared to construction activities, decommissioning activities would generally last for a shorter period of time and would have a lower intensity. Therefore, noise and vibration impacts related to decommissioning would be negligible.

O&M of the project facilities would generate substantially lower noise levels than project construction, and vibration generation would be negligible.

During operation, noise from the gen-tie line could be generated from what is referred to as the Corona Effect, a phenomenon associated with the electrical ionization of the air that occurs near the surface of an energized conductor and suspension hardware due to very high electric field strength. This is audible power line noise that is generated from electric Corona Effect discharge, which is usually experienced as a random crackling or hissing sound. The amount of Corona Effect produced by a transmission line is a function of the voltage of the line, the diameter of the conductors, the locations of the conductors in relation to each other, the elevation of the line above sea level, the condition of the conductors and hardware, and the local weather conditions. Corona Effect noise is primarily audible during wet-weather conditions such as fog and rain. For transmission lines, the maximum Corona Effect noise during wet weather conditions is usually less than 40 dBA at a distance of 50 feet. During the dry conditions that normally occur in the project area, the noise levels from the Corona Effect would be low, 20 dBA or less. This is consistent with previously measured and modeled noise levels on transmission line projects throughout California operating at full capacity. Therefore, noise impacts from operation would be minor and well below Kern County's most restrictive nighttime standard of 45 dBA.

4.11 Public Health and Safety

4.11.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.11.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

Hazardous Materials

The absence of known hazardous materials in the project area is discussed in Section 3.9. There are no hazardous materials or recognized environmental conditions identified on the private lands solar facility site or on any of the alternative gen-tie line alignments.

Structural Height Limitations

Aboveground transmission lines can pose a threat to aviation safety if they are located within an airport land use plan or flight zone. The project area is not located within an airport compatibility zone associated with any of the public airports in Kern County. The closest public airport is the California City Airport, which is located approximately 4.8 miles to the southeast of the project

area. The project area is, therefore, well outside of the airport's designated approach and departure zones.

Kern County's Zoning Ordinance requires that DOD review proposals to construct structures that will be taller than specified heights within certain zones. The project area lies within such a zone. The project Applicant has submitted its plans to DOD, and DOD has concurred that construction of the gen-tie line would create no impacts to the military mission. As such, construction of a gen-tie line on any other structure in exceedance of the specified heights would be consistent with Kern County's Zoning Ordinance.

Valley Fever

Fugitive dust generated during project activities could expose workers to the *Coccidioides* fungal spores that may be present in desert soils. The period of greatest risk for exposure would be during project construction.

Dust control represents the principal means of prevention of contact with Valley Fever spores during ground-disturbing activities. As discussed in Section 2.2.2, dust control would be implemented during construction in accordance with Kern County guidelines. Effective control would generally be gained with regular applications of water using water trucks. In some areas of regular use, such as construction access roads, a dust palliative would be used to minimize dust. Implementation of these measures would reduce the risk to workers of contracting Valley Fever.

4.12 Recreation

4.12.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.12.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

The principal recreation activities associated with the project area include OHV riding, primitive camping, hiking, hunting, and other outdoor pursuits. The various travel routes that cross the private lands and BLM-managed lands in the area provide recreational users with access to the area for the pursuit of these activities.

Several roadways are currently present on the solar facility site. These are not public roadways, although easements are in place for use of some of the roadways by LADWP for access to its transmission lines. There is, however, no public right-of-access to these roadways. The continued use of the roadways is at the discretion of the landowner.

With construction of the solar facility and erection of the site's perimeter fencing, these roadways would only be accessible to authorized users. However, existing public users of these roadways would still have access to adjoining public and private lands through the use of other roadways that traverse the area.

The alternative gen-tie line alignments would cross over or use these routes at various points along their alignments, and these routes would remain open and would continue to provide access to members of the recreating public. Also, additional service road segments would be constructed to provide access to the gen-tie line. These routes would also be available to the recreating public for their use.

4.13 Socio-Economics and Environmental Justice

4.13.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as “Resource Management” lands, and are zoned as “A FP” (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.13.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

As discussed in Section 3.15, persons living within the region can be considered part of an environmental justice population based on the region’s median income and the percentage of families living in poverty. Existing guidance concerning environmental justice communities requires agencies to determine if the impacts of a project’s implementation would disproportionately affect environmental justice communities living in the vicinity of the project.

There are very few people residing in the project area that would be potentially affected by any of the alternatives. The nearest residence is approximately 2 miles from the project area. Further, all project components would be constructed in accordance with all Federal, State, and local plans and policies. As described within this EA, all potential adverse effects from construction, O&M, and decommissioning of the proposed solar facility and gen-tie line alignment would be reduced to less-than-adverse levels with implementation of the identified mitigation measures. Therefore, there would be no direct or indirect adverse health, environmental, or socio-economic effects to any population resulting from construction or operation of the facilities. Therefore, implementation of the project would not result in high or adverse human health, environmental, or socio-economic effects that would disproportionately affect an environmental justice population.

4.14 Topography, Geology, and Soils

4.14.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.14.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

The project would not require mass grading or other activities that would substantially alter the existing topography in the area. Construction of the proposed solar facility and gen-tie line would occur on areas of low to moderate slope. New roadways would be consistent with existing dirt roadways in the area. Placement of structures would generally occur below grade, and would not alter area topography.

The principal geology and soils hazards in the area include the potential for ground shaking and fault rupture. The facilities would be subject to strong ground shaking due to potential movement along the faults in the area. Direct impacts to the project's components could occur from strong

seismic ground shaking, and indirect impacts could occur in the form of damage to equipment that could require replacement.

The Garlock (West) Fault runs along the base of Barren Ridge and is located several hundred feet west of the project area. Direct damage to the project facilities from fault rupture would be unlikely based on the distance from the potential fault rupture zone.

Soils in the project area predominately consist of loamy sands. These soils are generally well-drained and are moderately susceptible to water erosion in areas of high slope. Slopes within the project area are only moderate, and generally range from 2% to 15%. Implementation of standard best management practices (BMPs) during construction would suffice to limit the potential for water erosion.

Occasional high winds are common in the area, which make disturbed and loose soils susceptible to wind erosion during construction. As discussed previously in Section 4.1, disturbed portions of the project area would be watered and/or treated with a dust palliative during construction to lessen wind erosion and dust production. Implementation of these standard techniques would limit the potential for wind erosion during construction.

4.15 Transportation and Public Access

4.15.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.15.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

Potential impacts to transportation and public access would generally center around construction traffic entering and exiting the project area from/to SR-14, as well as potential impacts to existing BLM-designated and private lands routes that would be crossed or used during construction and operation of the gen-tie line alignment.

SR-14 is a moderately travelled divided four-lane roadway in the vicinity of the project area. Left-turn lanes with long pockets are provided at all turning locations along the highway segment that passes through the project area. Wide shoulders are also present along the right sides of the roadway in both directions. Road conditions and visibility are excellent, and traffic volumes are lower than that which would be expected for a roadway that has been built to SR-14's existing standards. As such, any increases in traffic volumes during construction would have a negligible effect on existing traffic conditions. Based on the roadway's existing configuration, along with the presence of adequate turn lanes, shoulders, sight distances, and signage, construction vehicles exiting and entering SR-14 would be able to do so safely and without slowing or impeding traffic flows.

Current traffic along private land and BLM-designated routes in the area is very limited, and is generally restricted to occasional recreational users and maintenance crews associated with the existing transmission facilities in the area. Existing uses would not be impeded during construction or O&M. Designated routes would remain available for public use, and any new service roads or service road segments constructed as part of gen-tie line construction would also be available for public use.

4.16 Visual Resources

Landscape scenery impacts (see Table 8 in Appendix G) were determined based on the comparison of change caused by the project to the scenic quality inventory of the affected environment. The results are based on consideration of existing scenic quality rating/scores, existing landscape character, presence or absence of existing industrial development (e.g., transmission lines, pipelines), and the effect of introducing the project into the landscape as either a new or additional cultural modification.

Sensitive viewer impacts were determined based on the comparison of change caused by the project with sensitivity/user concern levels, distance zones (0 to 0.5 mile, 0.5 to 2.5 miles, 2.5 to 5 miles, and greater than 5 miles), and visibility of the project (see Tables 9 and 10 in Appendix G).

Visual impact levels were outlined by alternative (see Table 11 in Appendix H). Impacts to landscape scenery were determined by measuring the extent of effects of the project's structures, access roads, and disturbed ROWs on the scenic landscape through spatial analysis of the visual resource inventory and visual quality classifications, or equivalents thereof. Impacts to viewers were determined by measuring the extent effects of the project's structures, access roads, and disturbed ROWs on people through spatial analysis of project visibility, sensitivity levels, and distance zones.

4.16.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.16.2 Alternatives 2, 3, and 4

Direct and Indirect Impacts

Solar Facility Site

Direct impacts to people and scenery in the visual landscape would occur from changes to the context of the visual landscape or modifications of the characteristic landscape, and/or from introductions of contrasting forms, lines, colors, and textures of landform, vegetation, and structures needed to accommodate the project.

Construction Impacts

The visual landscape would be affected by construction of the proposed solar facility and associated ancillary structures, including a substation. Due to the visual nature of construction activities necessary to build the facilities, viewshed disturbances would result from the addition of PV panels, inverter stations, and a substation.

Impacts to the scenery caused by large expanses of color and muted reflectivity, forms of structures, vertical and horizontal lines of structures and conductors, silvery-grey and tan colors, and smooth textures would result from introduction of the solar array and substation, vegetation clearing, fences, and roads.

During the short term of construction, direct impacts to people and scenery in the visual landscape is anticipated to be moderate to high, and contrasts would comply with BLM VRM Class III management objectives. Project construction activities that are located within 0.5 mile of high or moderate sensitivity viewers and have strong or moderate contrasts and/or impacts to the visual landscape would not be expected to comply with BLM VRM Class III objectives. Mitigation for project facilities constructed at distances greater than 0.5 mile from stationary and linear KOPs typically would reduce visual contrasts to moderate and, therefore, result in compliance with VRM Class III management objectives.

Operation Impacts

Visual resources would be impacted during operation of the project due to contrasts from PV panels, inverters, and a substation, and cleared ROWs, permanent access roads, and other areas of ground or vegetation management.

Direct impacts to viewsheds similar to those discussed for the construction phase would be expected during operation. However, due to the low vertical profile of facilities located within 0.5 mile of SR-14, and the preferred location of the substation at middleground distance, the casual observer (viewers in the landscape) would not consider visual quality to be substantially diminished with construction of the project. As such, impacts to the visual landscape and to Class C scenery would be low to moderate. Indirect viewshed impacts would result from disturbance by human recreational activities, artifacts of activities, and vehicles with access to

scenic landscapes. Indirect impacts during operation would be expected to comply with equivalent BLM VRM Class III management objectives.

The solar facility would have weak to moderate contrast and moderate visual impact, as all substantive vertical structures would occur beyond the foreground distance.

Construction and operation of the solar facility would result in some residual impacts to people and scenery. Topographic modifications on moderate slopes, vegetation management, and potentially sky-lined structures situated in the immediate foreground would impact sensitive viewers and Class C scenery. Application of integrated design features, as described previously in Section 2.3.1, would lessen visual impacts related these alternatives from moderate to low. These features include the following:

- Surface coatings of applicable permanent structures would use an appropriate color palette to minimize contrast with surrounding visual elements.
- All lighting would be shielded and directed downward to minimize the potential for glare and spillover.
- The solar facility substation would be sufficiently far from SR-14 to reduce visual impacts when viewed from the road.

Federal or Private Lands Gen-Tie

Landscape scenery impacts (see Appendix H, Table 8) for the Alternative 2, 3, and 4 gen-tie line alignments were determined based on the comparison of change caused by each of the gen-tie line alternatives with the scenic quality inventory of the affected environment. The results are based on consideration of existing scenic quality rating/scores, existing landscape character, presence or absence of existing industrial development (e.g., transmission lines, pipelines), and the effect of introducing a gen-tie line into the landscape as either a new or additional cultural modification.

Sensitive viewers' impacts were determined based on the comparison of change caused by the gen-tie line with sensitivity/user concern levels, distance zones (0 to 0.5 mile, 0.5 to 2.5 miles, 2.5 to 5 miles, and greater than 5 miles), and visibility of the gen-tie line for each of the action alternatives (Tables 9 and 10, Appendix H).

Visual impact levels were outlined by alternative (see Table 11, Appendix H). Impacts to landscape scenery were determined by measuring the extent of effects of the alternative's structures, access roads, and disturbed ROWs on the scenic landscape through spatial analysis of BLM's visual resource inventory and visual quality classifications. Impacts to viewers were determined by measuring the visual effects of the transmission structures, access roads, and

disturbed ROWs on people through spatial analysis of BLM's visual resource inventory, sensitivity levels, and distance zones.

Compliance with BLM VRM objectives was determined by comparing objectives with visual contrast ratings and evaluating the three alternatives and the three design options for Alternative 2 (Alternatives 2A, 2B, and 2C). Alternative 2C's visual appearance would be essentially identical to Alternative 2B, so the analytical results for Alternative 2B were adopted for Alternative 2C as well.

Visual resources in the visual landscape would be affected by transmission line construction and operation. During construction, viewshed disturbance, including project visibility in the visual landscape, includes the addition of self-supporting steel lattice structures or wooden H-frame structures, conductors, cleared ROWs, temporary buildings, fences, construction-related equipment, debris storage, and ground areas cleared for construction, such as access roads, transmission line tower work areas, conductor stringing and tensioning sites, material storage yards, staging areas, ground electrode systems, and electrical lines.

During operation, visual resources would be impacted in a similar manner due to contrasts from transmission structures, terminal facilities, ground electrode facilities, and disturbance by cleared ROWs, permanent access roads, and other areas of ground or vegetation disturbance.

Direct impacts to people and scenery in the visual landscape would occur from visual changes to the context of the visual landscape, modifications of the characteristic landscape, and/or introductions of contrasting forms, lines, colors, and textures of landform, vegetation, and structures needed to accommodate construction and operation of the gen-tie line.

In undeveloped areas, impacts to the visual landscape caused by pyramidal forms of structures, vertical and horizontal lines of structures and conductors, silvery-grey and tan colors, and smooth textures would result from multiple steel or wooden structures along the tangents, and vegetation clearing, fences, and roads. In viewsheds with existing electrical transmission line structures and ground disturbances, contrasts would be weak to moderate, depending on the distance from the observer and the number and type of structures. In all cases, construction activities or permanent structures occurring in the immediate foreground of the observer would cause greater contrasts and/or impacts to the visual landscape than those appearing at a farther distance.

As noted in Section 3.17.1, to preserve continuity, approved Interim BLM VRM Classifications from the immediately adjacent BR RTP have been adopted for this project. For the BR RTP, the surrounding scenic quality was classified as BLM Class C scenic quality, or a "common area where characteristic features have little variation in form, line color, or texture in relation to the surrounding region" (BLM 1986a). Also for the BR RTP, the BLM VRM Management Objectives were assigned an interim classification of Class III. For Class III landscapes, the

management objective “is to partially retain the existing character of the landscape. Changes to the landscape character may begin to attract attention but should not dominate the visual setting” (BLM 1986a).

Figures 9 through 20 in Appendix H provide simulated visual effects for each alternative gen-tie line alignment. Table 4.16-1 shows a summary of the visual resources impact levels for each alternative, as derived from the analysis contained in Appendix H.

Table 4.16-1. Summary of Visual Resources Impact Levels		
Alternative	Impact	Criteria
3, 4	High	These alternatives would be visible within 0.5 mile of high sensitivity viewers (i.e., travelers on the adjacent State Route 14).
2A, 2B, 2C	Low	<p>These alternatives would be dominant or co-dominant in Class C landscape scenery.</p> <p>These alternatives would be visible in greater than 2 miles of medium sensitivity viewers.</p> <p>These alternatives would parallel and be co-dominant with existing transmission line features.</p>

Compliance with BLM Class III VRM objectives was determined by comparing the objectives with visual contrast ratings and evaluating each of the three alternatives and the three design options for Alternative 2 (Alternatives 2A, 2B, and 2C). The summary of each alternative’s compliance with the VRM objectives is provided in Table 4.16-2, by alternative.

Table 4.16-2. Summary of Visual Resource Management (VRM) Objective Compliance		
Alternative	Compliant?	Criteria
3, 4	No	These alternatives would have a high contrast in areas with VRM Class III objectives.
2A, 2B, 2C	Yes	These alternatives would have a low contrast in areas with VRM Class III objectives.

Based on the information presented in Table 4.16-2, as well as the more detailed information and simulations provided in Appendix H, Alternatives 3 and 4 would not be consistent with BLM Class III VRM objectives for the area. This is largely due to their proximity to SR-14 (less than 0.5 mile) and their separation from existing and similar transmission structures. Alternatives 2A, 2B, and 2C would be consistent with BLM Class III VRM objectives. This is because these alternative alignments would be located farther away from SR-14 (greater than 0.5 mile) and because of their proximity to existing and similar transmission structures. The effect of their greater distance from sensitive viewers and their proximity to existing transmission lines would

create low levels of contrast, and thus render their overall visual effect as consistent with Class III objectives.

Mitigation for the adverse visual effect that would be created by implementation of Alternatives 3 and 4 is not available. This is because both of these alternatives would introduce a dominant visual element to the visual environment in immediate proximity to sensitive viewers. This effect would be inconsistent with VRM objectives for the area. As such, implementation of either Alternative 3 or Alternative 4 would result in an unavoidable adverse effect to visual resources.

4.17 Water Resources

4.17.1 Alternative 1 (No Action Alternative)

Under Alternative 1, USFWS would not approve the Applicant's HCP and USFWS would not issue an ITP. Neither the proposed solar facility nor a public or private lands gen-tie line would be constructed. None of the effects described below for Alternatives 2, 3, and 4 would occur.

It is anticipated that the private lands associated with Alternatives 2, 3, and 4 would remain in their current state, and would be available for other uses in accordance with the Kern County General Plan (Kern County 2009) and other applicable regulations. These lands are classified in the General Plan as "Resource Management" lands, and are zoned as "A FP" (Agriculture-Floodplain Combining). Uses authorized for this designation and zoning include crop production, animal production, livestock grazing, utility and communication facilities, resource extraction, and energy development (Kern County 2012). A number of additional uses could be permitted in the future with issuance of a conditional use permit, including solar power generation, single-family residential development, and a number of commercial and institutional uses.

Similarly, the public lands associated with Alternatives 2 and 3 would continue to remain in their existing condition, with no new structures or facilities constructed or operated in the locations of the alternative gen-tie line alignments.

Failure to implement one of the action alternatives would not preclude these and other uses from being proposed and possibly implemented in the future. Although not constructing the proposed project would avoid all of the effects described for Alternatives 2, 3, and 4 in the near term, future projects proposed for the area in the longer term, including similar solar energy and energy transmission projects, could result in more severe, less severe, or similar effects as those described below for the action alternatives.

4.17.2 Alternatives 2, 3, and 4

Impacts to surface water resources would be limited, and would be largely related to surface flows that could be impacted by facility construction. There are no perennial streams in the area, and the only flows that occur are during infrequent storm events. Flows during storm events

could be interrupted or diverted by roadways and other features. However, flows would be allowed to pass over service roads and other features via carefully placed cutouts that would allow flows to pass along their existing courses. These features would be maintained during the operational phase of the project. During construction, standard BMPs would be implemented to limit the effects of water erosion on loose and disturbed soils. These measures could include the placement of straw bales, waffling, or other techniques to slow and redirect flows to limit their erosive potential.

No wells or impoundments would be constructed or used as part of project construction or operation. There would, therefore, be no impact to groundwater resources.

Wetlands or other water resources under the jurisdiction of USACE are not present within the project area. There would, therefore, be no impact to these resources.

Pine Tree Canyon Wash, which is part of a FEMA-designated Flood Zone “A,” would be crossed by each of the alternative gen-tie line alignments. However, no transmission structures or new service road segments would be constructed within the wash. The transmission line would instead span the entire width of the wash, and no structures would need to be placed within the wash itself. Similarly, no new service road segments would be constructed in the wash. Access to the gen-tie line would either occur using existing service roads or via access road segments that would terminate on either side of the wash. Therefore, no gen-tie line components would be located within the wash, and there would be no impacts to floodplains or aquatic resources within the wash.

4.18 Cumulative Impacts

The analysis of cumulative impacts takes into account the effects in common with other past, present, and reasonably foreseeable future actions. The analysis identifies past actions that are closely related either in time (temporal) or space (geographical proximity) to the project area, present actions that occur concurrently at the time this EA was being prepared, and reasonably foreseeable future actions that are highly likely to occur.

Table 3.19-1 in Section 3.19 provides a listing of all reasonably foreseeable projects within the jurisdiction of Kern County and the BLM within 20 miles of the project area. This area was selected for cumulative analysis because it is where most of the renewable energy projects in the Kern County portion of the Mojave Desert are occurring. Reasonably foreseeable projects are those for which an application has been submitted to the appropriate agency, are currently undergoing environmental review, or will be pursuing environmental review in the near future. Activity must be occurring for the project to be reasonably foreseeable. Projects that may have started the application or environmental review process but have been stalled are not considered reasonably foreseeable.

The direct and indirect effects of the proposed project and each alternative, together with the effects of the other actions that have a cumulative effect, are analyzed for each resource or issue area below. Because the project area for all of the action alternatives is essentially the same, the action alternatives are discussed collectively rather than individually.

4.18.1 Air Resources

None of the alternatives would create any unmitigated construction air quality impacts based on applicable standards. Both construction and operational air quality emissions would be well below *de minimis* levels, and would contribute negligible emissions. Once operational, the solar facility and associated gen-tie line would generate negligible air quality emissions. Therefore, no cumulative operational air quality impacts are anticipated.

4.18.2 Biological Resources

As development pressures increase within Kern County, impacts to biological resources within the region are increasing on a cumulative level, and implementation of the action alternatives (i.e., Alternatives 2, 3, or 4) is likely to incrementally contribute to cumulative impacts in the region. The action alternatives analyzed would permanently remove up to 507 acres for at least the life of the proposed project. The majority of the area impacted (approximately 500 acres) would provide little to no value to biological resources given the surface disturbance associated with construction and operation of a solar facility and installation of permanent fencing (including desert tortoise exclusion fencing) surrounding the solar facility boundaries. To ensure no significant cumulative loss of biological resources, the Applicant would compensate for impacts to federally and State-listed species through off-site habitat acquisition and conservation, thereby mitigating for impacts to these species and the biological resources they depend on (e.g., suitable vegetation communities). The Applicant would coordinate with USFWS and CDFW to ensure that off-site habitat acquisition and conservation for federally and State-listed species are consistent with the goals and objectives of applicable recovery or management plans (e.g., the Desert Tortoise Recovery Plan [USFWS 2011]).

The principal federally regulated biological resource of concern in the project vicinity is desert tortoise. In the most recent review of the species' status, habitat loss due to urbanization or other modification was identified as the most prominent threat (USFWS 2010). To evaluate the magnitude of the contribution represented by the development of the proposed project to cumulative desert tortoise habitat loss, it was necessary to calculate the total potential habitat loss that would occur through projects under development, or reasonably foreseeable projects currently under review.

The revised Desert Tortoise Recovery Plan (USFWS 2011) designated five contiguous Recovery Units across the Mojave Desert within California, Nevada, Arizona, and Utah. The proposed project is located within the Western Mojave Recovery Unit. Nussear et al. (2009) modeled desert tortoise habitat within the Western Mojave Recovery Unit (and other recovery units)

based on a number of physiographic factors. Modeled habitat was rated on a scale of 0.0 to 1.0 (Nussear et al. 2009). For the purposes of assessing cumulative impacts to desert tortoise habitat, modeled habitat with a rating of 0.5 and higher is considered suitable desert tortoise habitat. Modeling identified approximately 7,582,092 acres of suitable desert tortoise habitat (i.e., habitat with a rating of 0.5 and higher) in the Western Mojave Recovery Unit. In 2014, USFWS determined that approximately 1,864,214 acres of suitable desert tortoise habitat modeled by Nussear et al. (2009) had been converted to urban land or other “impervious uses” (USFWS 2014). This represented 25% of the total suitable habitat modeled with the Western Mojave Recovery Unit.

Projects that are either under development, already approved, or with a complete application undergoing review were reviewed to identify alternative energy projects that are either under development, approved, or are “reasonably foreseeable,” and that are located within portions of the Western Mojave Recovery Unit. Alternative energy projects approved prior to 2005 were not included, as Kern County records for these earlier projects were not available. It is assumed that these projects, approved in 2005 or earlier, are included in the total of 1,864,214 acres of converted suitable desert tortoise habitat. A total of 24 alternative energy (i.e., wind, solar, and related transmission facilities) projects, including the proposed project, were included in the calculation of approved or foreseeable projects that would result in additional loss of suitable desert tortoise habitat, as modeled by Nussear et al. (2009).

The Western Mojave Recovery Unit currently includes approximately 5,717,878 acres of intact suitable habitat. If all 24 alternative energy projects were implemented, up to approximately 58,297 acres of suitable habitat would be converted to “impervious surfaces.” This represents approximately 1% of the remaining intact suitable habitat within the Western Mojave Recovery Unit (i.e., 58,297 acres of 5,717,878 acres). This estimate is considered conservative for two reasons:

1. It assumes that all 24 projects would be built. This is not likely. For example, of the 14 projects listed in the Beacon Solar Project EIR Cumulative Impacts analysis prepared in 2012 (Kern County 2014a), four are not included in the most recent project tabulations maintained by the Kern County Planning Department. It is probable that some of the projects included in the tabulation would not developed.
2. All acreage within proposed project boundaries is included as converted suitable desert tortoise habitat. This is a highly conservative approach of calculation, particularly for wind projects where substantial portions of project sites would remain in a largely undeveloped state.

The proposed project’s contribution to conversion of suitable habitat modeled by Nussear et al. (2009) within the Western Mojave Recovery Unit would amount to approximately 0.01% (i.e.,

up to 633 acres [depending on alternative] of 5,717,878 acres). As noted above, suitable desert tortoise habitat impacted by the proposed project would be offset by acquiring and conserving off-site habitat. This would ensure long-term conservation of suitable desert tortoise habitat in the Western Mojave Recovery Unit. Given that the proposed solar facility and gen-tie line project would contribute minimally to the cumulative loss of desert tortoise habitat in the region, and that impacts would be fully mitigated, the proposed project would not result in cumulative loss of desert tortoise habitat.

4.18.3 Climate Change

Construction and operational air quality emissions from each of the action alternatives would be well below applicable thresholds. Further, the proposed solar facility and its associated gen-tie line would facilitate production and transmission of renewable energy supplies to the larger electric grid. The proposed project, as well as other wind and solar projects proposed in the vicinity, would aid in meeting GHG reduction and renewable energy goals and policies adopted by both the Department of the Interior and the State of California. Overall, the cumulative effect would be beneficial with respect to GHG emissions and climate change.

4.18.4 Cultural, Historic, and Paleontological Resources

As discussed in Section 4.5, no resources identified as eligible for the NRHP are known to be present in the project area. In the event that previously unknown resources are discovered during project construction, standard practice calls for a halt to work in the affected area, followed by assessment of the find by a qualified archaeologist and tribal representative, if applicable. Based on the lack of identified resources in the project area, together with implementation of standard procedures if such resources were discovered during construction, there would not be a cumulatively adverse effect to cultural and historic resources.

Portions of the proposed project would be located in areas with moderate paleontological sensitivity. However, subsurface work taking place within specified rock units would be subject to an approved monitoring program, with follow-up actions specified if fossil resources were found. This is standard protocol for ground-disturbing activities in sensitive areas, and is considered full mitigation for impacts to this resource. As such, there would not be a cumulatively adverse effect to paleontological resources.

4.18.5 Energy Resources

Each of the action alternatives would facilitate the production and transmission of renewable energy supplies to the larger electric grid, and would, thus, enhance the availability of energy supplies within the region and reduce impacts associated with traditional energy sources. The proposed project, as well as other wind and solar projects proposed in the vicinity, would augment existing supplies of energy, particularly renewable energy. Overall, the cumulative effect would be beneficial with respect to energy resources.

4.18.6 Fire and Fuels

As discussed in Section 4.7, construction of any of the action alternatives would not result in an adverse effect with respect to fire and fuels. Invasive weeds that could contribute to increased fuel loading and fire risk would be managed through mechanical and chemical controls. These activities would serve to limit the increased distribution of invasive plants and weeds that could more effectively carry fire. Safety and emergency management plans and programs would also be established. These activities would prescribe methods by which fire risk could be minimized, and would also prescribe actions to be taken in the event of fire. Based on each of these factors, no adverse effects with respect to fire and fuels would occur. Other projects proposed for the vicinity would be required to abide by the same conditions, so they would also create no residual negative cumulative effects. Accordingly, the proposed project would not contribute to a cumulative effect.

4.18.7 Hazardous and Solid Wastes

As discussed in Section 4.8, construction of any of the action alternatives would not result in an adverse effect with respect to hazardous and solid wastes. Any impacts associated with the use of these materials would be mitigated via implementation of approved management plans, best practices, and compliance with applicable regulations. Other projects proposed for the vicinity would be required to abide by the same conditions, so they would also create no residual negative cumulative effects. Accordingly, the proposed project would not contribute to a cumulative effect.

4.18.8 Land Use

As discussed in Section 4.9, the proposed project is consistent with all applicable land use plans, including those of the BLM and Kern County. No land use conflicts would occur, and the rights and enjoyment of use of adjacent property owners would not be impeded. The solar facility site and the Alternative 4 private lands gen-tie line alignment are located adjacent to a designated energy corridor, and the proposed use is consistent with the planned use of the area, and would not contribute to a cumulative effect with respect to land use.

4.18.9 Noise and Vibration

The proposed project is located in a rural area where the nearest sensitive noise and vibration receptor is at least 2 miles away. No adverse noise or vibration impacts to these receptors would occur. Therefore, any noise and vibration created by the project would not add to a cumulatively adverse condition.

4.18.10 Public Health and Safety

As discussed in Section 4.11, construction of any of the action alternatives would not result in an adverse effect with respect to public health and safety. Any public health and safety impacts associated with the project would be mitigated via implementation of approved management

plans, best practices, and compliance with applicable regulations. Other projects proposed for the vicinity would be required to abide by the same conditions, so they would also create no residual negative cumulative effects. Accordingly, the proposed project would not contribute to a cumulative effect.

4.18.11 Recreation

The proposed project would be constructed in an area that is subject to occasional use by members of the recreating public. This recreational use is generally limited to use of existing private lands and BLM-designated routes in the area. With the proposed project, this existing use would not be impeded, subject to applicable regulations. New roadways and roadway segments could actually enhance access to the recreating public. The proposed project would, therefore, create no adverse effect with respect to recreation. Some of the solar and wind projects proposed for BLM lands could potentially impact the availability of recreational lands. In those areas, recreation lands could be lost if they were replaced with solar arrays and large quantities of infrastructure. However, the proposed project would not contribute to that effect. Therefore, the proposed project would not contribute to a cumulative effect with respect to recreation.

4.18.12 Socio-Economics and Environmental Justice

As discussed in Section 4.13, construction and operation of the proposed project would be expected to result in only minor socio-economic impacts and would not disproportionately affect minority or low-income populations. The project would provide a small number of construction jobs for specialty trades, but would not displace any existing jobs. Development of other cumulative renewable energy facilities in the area would have a similar effect. In general, there would be an increase in short-term employment associated with construction of the various cumulative projects.

The projects that may be built under cumulative conditions would each provide varying levels of employment, and the short-term employment would be comparable to or in excess of the full-time employment currently occurring in the area. Although construction workers may come from a broad area, particularly specialists, the potential for a short-term increase in employment is not anticipated to result in any major immigration or population growth due to the relatively high unemployment rate in the area.

4.18.13 Topography, Geology, and Soils

As discussed in Section 4.14, any impacts associated with topography, geology, and soils would be fully mitigated through implementation of BMPs, project design features, and compliance with applicable regulations. Wind and water erosion of soils would be adequately contained through standard control practices. Other projects proposed for the vicinity would be required to abide by the same conditions, so they would also create no residual negative cumulative effects. Accordingly, the proposed project would not contribute to a cumulative effect.

4.18.14 Transportation and Public Access

As discussed in Section 4.15, traffic resulting from construction of the project would be easily accommodated by the above-standard transportation network in the area. Negative effects to existing levels of service or roadway safety would not occur, and any effects would be temporary. Accordingly, the proposed project would not contribute to a cumulative effect to existing transportation systems.

Public access to the project area would not be impeded by project development. The public would retain access to adjacent BLM lands and BLM-designated routes, subject to applicable regulations. Accordingly, the proposed project would not contribute to a cumulative effect to public access.

4.18.15 Visual Resources

The Mojave Desert and other portions of California are currently undergoing substantial change through the development of renewable energy projects. As noted in Table 3.19-1, a number of wind and solar projects are proposed for the region, several have started construction, and a number are already operational. As more of these projects come online, the visual character of portions of the region will be changed. These changes, however, have been considered and planned for in regional planning documents for Federal, State, and local agencies. Areas identified for visual resources conservation will be conserved, and other areas identified for renewable energy and other development will be managed in accordance within adopted criteria that, among other things, would serve to limit substantial degradation of visual character. The project area has been identified by Kern County as appropriate for renewable energy production, and several renewable energy projects have either been approved by Kern County (including the proposed project), are under construction, or are already operational. Similarly, the BLM has designated the Federal lands adjacent the project area as an energy corridor, meaning that they are intended to be used for the placement of energy infrastructure such as transmission lines and substations. The proposed project would be consistent with these adopted plans and ongoing projects. Accordingly, the proposed project would not contribute to a cumulative effect on visual resources.

4.18.16 Water Resources

As discussed in Section 4.17, any impacts associated with water resources would be fully mitigated through implementation of BMPs, project design features, and compliance with applicable regulations. Water erosion of soils would be adequately contained through standard control practices, and potentially hazardous materials would be stored and applied in compliance with applicable regulations and approved management plans. Other projects proposed for the vicinity would be required to abide by the same conditions, so they would also create no residual negative cumulative effects. Accordingly, the proposed project would not contribute to a cumulative effect.

5. TRIBES, AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED

5.1 Introduction

This section describes the consultation, coordination, and public participation activities that have occurred or are on-going for the proposed project. A number of consultations have been undertaken to provide guidance on the relationship between USFWS as Lead Agency for the EA and other agencies. These are summarized here.

5.2 Tribal Consultation

USFWS is cooperating with the BLM for consultation with Native American tribes to identify sacred sites and other places of traditional religious and cultural importance, and to incorporate appropriate mitigation measures in the event that such sites are located during construction.

In addition to USFWS's and BLM's consultation, the Applicant contacted the California Native American Heritage Commission (NAHC) about any issues of cultural concern regarding the project area. In particular, inquiry was made as to whether there were any traditional cultural properties, sacred sites, resource collecting areas, or any other areas of concern in the project area. The NAHC conducted a Sacred Lands File search of the project APE and found that Native American cultural resources were not identified within the inventory. However, the NAHC is aware of recorded archaeological sites and Native American cultural resources in proximity to the APE. The NAHC suggested consultation with the following tribes and interested Native American groups, who were each contacted:

- Kawaiisu Tribe of Tejon Reservation
- Kern Valley Indian Council
- Kitanemuk and Yowlumne Tejon Indians
- San Fernando Band of Mission Indians
- San Manuel Band of Mission Indians
- Tejon Indian Tribe
- Tubatulabals of Kern County
- Tule River Indian Tribe

The BLM and USFWS co-hosted a pre-application meeting with tribal representatives and other interested parties for the proposed project. The meeting was held with tribal representatives and other interested parties at BLM's Jawbone Station Visitor's Center on March 24, 2014. Invitation letters to this meeting are included as Appendix A. Participants included Native American tribal representatives, Caltrans representatives, and Cantil Water District representatives. Issues raised during the meeting included the following:

- Caltrans ROW concerns and requirements relating to SR-14.
- Native American participation during project development, cultural resources surveys, and construction.

Based on input received from tribal representatives at this meeting, tribal representatives were invited to participate in the cultural resources surveys for the project. As a result, several tribal members were present during the surveys.

5.3 California Department of Fish and Wildlife Coordination

CESA review and approval will be required for impacts to State-listed species. Focused biological surveys for sensitive species have been conducted for all potential project areas, as described in Section 3.3. CDFW has been consulted in this analysis, and is an active partner with USFWS concerning impacts to species associated with the project.

5.4 U.S. Army Corps of Engineers Coordination

Desert aquatic features are anticipated to be considered "geographically isolated" aquatic features and, thus, non-jurisdictional waters of the U.S. by USACE. As such, coordination with USACE is not required.

5.5 Regional Water Quality Control Board Coordination

The project applicant conducted a site visit with the Regional Water Quality Control Board, and submitted a permit application for coverage for potential impacts to waters of the State.

6. LIST OF PREPARERS

6.1.1 U.S. Fish and Wildlife Service, Palm Springs Fish and Wildlife Office

The following personnel from the Palm Springs U.S. Fish and Wildlife Service office were involved in the preparation and review of this EA:

- Ray Bransfield, Senior Biologist
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6.1.2 Contractor, AECOM Technical Services

- Jennifer Guigliano, Project Director
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- Luke Evans, NEPA Lead
- Mark Roll, Biological Resources Lead
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7. REFERENCES

Advisory Council for Historic Preservation (ACHP). 2009. Section 106 Archaeology Guidance. Available at <http://www.achp.gov/archguide>. Last accessed November 13, 2009.

AECOM. 2011a. RE Barren Ridge 1 Photovoltaic Electrical Generation Facilities Jurisdictional Delineation Letter Report and Request for an Approved Jurisdictional Determination. Included in Appendix D of this Draft EA.

AECOM. 2011b. Preliminary Hydrology and Hydraulics Study for Barren Ridge Recurrent Energy. August 1, 2011.

AECOM. 2014a. Golden Eagle (*Aquila chrysaetos*) Analysis for the Recurrent Energy Cinco Project, Kern County, California. January 13, 2014. Included in Appendix D of this Draft EA.

AECOM. 2014b. Report Summarizing Results of the RE Cinco Generation Tie-Line Project: Alternative 2 Preferred Alignment. April 8, 2014. Included in Appendix D of this Draft EA.

AECOM. 2014c. Cultural Resources Inventory Report for the Proposed Recurrent Energy Cinco Solar Facility Project, Kern County, California. July 2014. Included in Appendix E of this Draft EA.

AECOM. 2014d. Report Summarizing Results of the RE Cinco Generation Tie-Line Project: Alternative 2 Preferred Alignment.

AECOM. 2014e. Survey Results for the All-Private Gen-Tie Alternative for the RE Cinco Project. Included as Appendix E of this Draft EA.

AECOM. 2014f. Rare Plant Survey Report for the RE Cinco Solar Project, Kern County.

AECOM. 2014g. Habitat Conservation Plan for the RE Cinco Project. August 2014. Included as Appendix C of this Draft EA.

AECOM. 2014h. RE Cinco Solar Project Draft Visual Resources Technical Report.

AECOM. 2014i. RE Cinco Gen-Tie Project Draft Visual Resources Technical Report.

Applied Earthworks. 2014. Paleontological Resources Survey for Recurrent Energy's Cinco Generator Intertie Project, Kern County, California. June 2014.

Avian Power Line Interaction Committee (APLIC). 2012. Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute, Washington, D.C.

Brooks, M.L., C.M. D'Antonio, D.M. Richardson, J.B. Grace, J.E. Keeley, J.M. DiTomaso, R.J. Hobbs, M. Pellant, and D. Pyke. 2004. Effects of Invasive Alien Plants on Fire Regimes. *BioScience*, 54, 677–688.

Bureau of Land Management (BLM). 1980. California Desert Conservation Area Plan.

Bureau of Land Management (BLM). 1986a. Manual H-8410-1. Visual Resource Inventory. Available at <http://www.blm.gov/nstcNRM/8410.html>.

Bureau of Land Management (BLM). 1986b. Manual H-8431. Visual Resource Contrast Rating. Available at <http://www.blm.gov/nstcNRM/8431.html>.

Bureau of Land Management (BLM). 1999. California Desert Conservation Area Plan as amended. Available at <http://www.blm.gov/pgdata/etc/medialib/blm/ca/pdf/cdd/cdcaplan.Par.15259.File.dat/CADesert>.

Bureau of Land Management (BLM). 2005. Final Environmental Impact Report and Statement for the West Mojave Plan. Available at http://www.blm.gov/ca/pdfs/cdd_pdfs/memo_pdfs/plan/memoVol-1-Chapter1_Bookmarks.pdf.

Bureau of Land Management (BLM). 2006. West Mojave Plan Amendment to the California Desert Conservation Area Record of Decision. Available at http://www.blm.gov/pgdata/etc/medialib/bhn/ca/pdf/pdfs/cdd_pdfs/wemo_pdfs.Par.4dfb777f.File.pdf.wemo_rod_3-06.pdf.

Bureau of Land Management (BLM). 2007. Final Vegetation Treatments Using Herbicides on Bureau of Land Management Lands in 17 Western States Programmatic Environmental Impact Statement. Available at http://www.blm.gov/wo/st/en/prog/more/veg_eis.html. Accessed April 28, 2014.

Bureau of Land Management (BLM). 2008. National Environmental Policy Act Handbook H-1790-1.

Bureau of Land Management (BLM). 2009. Approved Resource Management Plan Amendments/Record of Decision (ROD) for Designation of Energy Corridors on Bureau of Land Management-Administered Lands in the 11 Western States. Available at http://corridoreis.anl.gov/documents/docs/Energy_Corridors_final_signed_ROD_1_14_2009.pdf. Accessed April 16, 2014.

California Department of Conservation. 2010. Kern County Important Farmland – Rural Land Edition. Sheet 3 of 3. Available at <ftp://ftp.consrv.ca.gov/pub/dlrp/FMMP/pdf/2010/>. Accessed March 14, 2014.

California Department of Fish and Wildlife (CDFW). 2013. Results of Electronic Record Search of Rarefind: A Database Application for the Use of the California Department of Fish and Wildlife's Natural Diversity Database. California Natural Heritage Division, California Department of Fish and Wildlife, Wildlife and Habitat Data Analysis Branch. Sacramento, California.

California Department of Public Health. 2013. Valley Fever Fact Sheet. Available at <http://www.cdph.ca.gov/HealthInfo/discond/Documents/VFGeneral.pdf>. Accessed August 19, 2014.

California Department of Public Health. 2014. Coccidioidomycosis Yearly Summary Report, 2012. Available at <http://www.cdph.ca.gov/programs/sss/Documents/COCCI-UPDATED2012YEARLY.pdf>. Accessed August 19, 2014.

California Department of Transportation (Caltrans). 2012. Traffic Volumes on California State Highways.

California Department of Water Resources (DWR). 2004. California's Groundwater. Bulletin 118.

California Energy Commission (CEC). 2002. A Roadmap for PIER Research on Avian Collisions with Power Lines in California. Commission Staff Report. Public Interest Energy Research.

California Energy Commission (CEC). 2013. Blythe Solar Power Project Amendment (09-Afc-6c) Data Request Set No. 2 (Nos. 20–25). Available at http://www.energy.ca.gov/sitingcases/blythe_solar/pv_amendment/2013-07-12_Staffs_Data_Request_Set_02_Nos_20-25_TN-71556.pdf.

California Energy Commission (CEC). 2014. 2012/2013/2014 Avian Mortality Information for the Genesis, Desert Sunlight, and ISEGS Projects. Updated as of July 18, 2014. Available at http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-07C/TN202751_20140718T132916_Revised_Ex1133_Updated_Avian_Comparison_Table.pdf

Centers for Disease Control and Prevention. 2014. Valley Fever (Coccidioidomycosis). Available at <http://www.cdc.gov/fungal/diseases/coccidioidomycosis/index.html>. Accessed August 18, 2014.

CH2MHill, Inc. 2011. Beacon Photovoltaic Project Raptor Nest Inventory Aerial Survey Results.

Council on Environmental Quality (CEQ). 1997. Environmental Justice Guidance Under the National Environmental Policy Act.

Council on Environmental Quality (CEQ). 2010. Draft NEPA Guidance on Consideration of the Effects of Climate Change and Greenhouse Gas Emissions.

Department of Energy and Bureau of Land Management. 2008. Final Programmatic Environmental Impact Statement, Designation of Energy Corridors on Federal Land in the 11 Western States (DOE/EIS-0386).

Department of the Interior. 2007. Departmental Manual 517, Chapter 1. Integrated Pest Management Policy.

Dudek. 2014. Appendix 2.1-3 Boulevard Glare Study Draft Program Environmental Impact Report for Soitec Solar Development Project. Available at <http://www.sdcountry.ca.gov/pds/ceqa/Soitec-Solar-EIR.html>. Accessed March 2014.

DWR. *See* California Department of Water Resources.

Eastern Kern Air Pollution Control District (EKAPCD). 2014. Eastern Kern APCD Attainment Status. Available at http://www.kernair.org/Main_Pages/information.html. Accessed March 14, 2014.

Federal Emergency Management Agency (FEMA). 2008. Flood Insurance Rate Map No. 06029C2925E.

Horvath, G., G. Kriska, P. Malik, and B.A. Robertson. 2009. Polarized Light Pollution: A New Kind of Ecological Photopollution. *Frontiers in Ecology and the Environment* 7:317–325.

Horvath, G., M. Blaho, A. Egri, G. Kriska, I. Seres, and B. Robertson. 2010. Reducing the Maladaptive Attractiveness of Solar Panels to Polarotactic Insects. *Conservation Biology* 6:1644–1653.

Kagan, R.A., T.C. Viner, P.W. Trail, and E.O. Espinoza. 2014. Avian Mortality at Solar Energy Facilities in Southern California: A Preliminary Analysis. National Fish and Wildlife Forensics Laboratory. Available at http://docketpublic.energy.ca.gov/PublicDocuments/09-AFC-07C/TN202538_20140623T154647_Exh_3107_Kagan_et_al_2014.pdf.

Kern County. 2009. Kern County General Plan. Planning and Development Department. Available at <http://pcd.kerndsa.com/planning/planning-documents/general-plans>. Accessed March 14, 2014.

Kern County. 2012. Code of Ordinances. Available at <http://pcd.kerndsa.com/planning/planning-documents>. Accessed May 27, 2014.

Kern County Planning and Community Development Department. 2011a. Draft Environmental Impact Report, RE Distributed Solar Projects. Available at <http://pcd.kerndsa.com/planning/environmental-documents/218-re-distributed-solar-projects>. Accessed March 14, 2014.

Kern County Planning and Community Development Department. 2011b. Initial Study and Notice of Preparation, RE Distributed Solar Projects. Available at <http://pcd.kerndsa.com/planning/environmental-documents/218-re-distributed-solar-projects>. Accessed March 14, 2014.

Marushia, Robin G., Marc W. Cadotte, and Jodie S. Holt. 2012. Phenology as a Basis for Management of Exotic Annual Plants in Desert Invasions. *Journal of Applied Ecology*, 47:1290–1299.

McLeod, Samuel. 2010. Paleontological Resources for the Proposed Barren Ridge Project Near California City, Kern County, California. Letter to Scott Hudlow of Hudlow Cultural Resources Associates. September 24, 2010.

Natural Resource Conservation Service (NRCS). 2014. Web Soil Survey. Available at <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx>. Accessed March 14, 2014.

Nussear, K.E., T.C. Esque, R.D. Inman, L. Gass, K.A. Thomas, C.S.A. Wallace, J.B. Blainey, D.M. Miller, and R.H. Webb. 2009. Modeling Habitat of the Desert Tortoise (*Gopherus agassizii*) in the Mojave and Parts of the Sonoran Deserts of California, Nevada, Utah, and Arizona. U.S. Geological Survey Open-file Report 2009-1102.

Power Engineers. 2011. Barren Ridge Renewable Transmission Project – Visual Resources Technical Report. Prepared for Los Angeles Department of Water and Power. Available at https://www.ladwp.com/cs/idcplg?IdcService=GET_FILE&dDocName=OPLADWP007278&RevisionSelectionMethod=LatestReleased. Accessed July 22, 2014.

Rincon Consultants. 2011a. Biological Resources Assessment for the RE Kern County Desert Solar Projects. Included in Appendix D of this Draft EA.

Rincon Consultants. 2011b. Supplemental Biological Results: RE Rosamond One and Two, RE Barren Ridge 1. Included in Appendix D of this Draft EA.

Rincon Consultants. 2014. Supplemental Air Quality Analysis for the RE Barren Ridge Solar Project near Mojave, Kern County, California.

SJM Biological Consultants. 2014. Results of Habitat Assessment for California Threatened Mojave Ground Squirrel (*Xerospermophilus mohavensis*) at the Approximately 594-Acre Barren Ridge Project Site, Located in the Fremont Valley Area of Kern County, California. Included in Appendix D of this Draft EA.

Spencer, W.D., P. Beier, K. Penrod, K. Winters, C. Paulman, H. Rustigian Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Prepared for the California Department of Transportation, California Department of Fish and Game, and Federal Highways Administration.

Stantec Consulting Corporation. 2010. Geotechnical Study. RE Barren Ridge, Mojave, California. August 24, 2010.

U.S. Census Bureau. 2010. 2010 U.S. Census.

U.S. Census Bureau. 2012. American Community Survey (ACS), Estimated 5-Year 2012 Data.

U.S. Fish and Wildlife Service (USFWS). 1994. The Desert Tortoise (Mojave Population) Recovery Plan. U.S. Fish and Wildlife Service, Region 1 – Lead Region, Portland, Oregon.

U.S. Fish and Wildlife Service (USFWS). 2009. Desert Tortoise (Mojave Population) Field Manual: (*Gopherus agassizii*). Region 8, Sacramento, California. Available at http://www.fws.gov/Ventura/species_information/protocols_guidelines/index.html.

U.S. Fish and Wildlife Service (USFWS). 2010. Mojave Population of the Desert Tortoise (*Gopherus agassizii*) 5-Year Review: Summary and Evaluation.

U.S. Fish and Wildlife Service (USFWS). 2011. Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*). U.S. Fish and Wildlife Service, Sacramento, California.

U.S. Fish and Wildlife Service (USFWS). 2012. Status of the Species and its Critical Habitat-Rangewide. Desert Tortoise. February. Available at http://www.fws.gov/nevada/desert_tortoise/documents/misc/Status_of_the_Species-DT_February_9_2012.pdf.

U.S. Fish and Wildlife Service (USFWS). 2014. Biological Opinion for State Route 58 Kramer Junction Expressway Project, Kern and San Bernardino Counties, California.

U.S. Forest Service (USFS). 1999. Dust Palliative Selection and Application Guide. Available at <http://www.fs.fed.us/eng/pubs/html/99771207/99771207.html#EI>. Accessed April 24, 2014.